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Contract Systems, Bureaucracies, and Faculty Motivation: The Probable Effects of a No-Tenure Policy

The apparently ineluctable movement in higher education from tenure-based employment systems to short-term contracts portends significant and deleterious changes in institutional cultures, faculty motivation, and faculty productivity. This article analyzes the motivational functions of tenure and reveals how contracts and associated bureaucracies will negatively affect faculty work.

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This article disputes the common stereotype that adult students are less effective and less successful as students simply because they are adults. There is no evidence that they lack the skills for effective study, experience learning difficulties because of age-related impairment in their intellectual capabilities, or perform academically less well than younger students.

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research suggests that campuses can best assist their student borrowers by promoting good academic performance and student degree completion and disputes the national policy that holds institutions rather than individuals accountable for default behavior resulting from factors that are beyond campus control.

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In the Service of Citizenship: A Study of Student Involvement in Community Service

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Cultural Barriers Facing Lesbian, Gay, and Bisexual Students at a Catholic College

This article reports a case study of how the organizational culture relates to the issue of sexual orientation at a Catholic college. The specific focus of the analysis is on discovering the cultural barriers facing lesbian, gay, and bisexual individuals and the cultural dynamics that contributed to the failure to change the culture of the institution in relation to sexual orientation. It includes implications for practitioners and suggestions for future research.

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Pushed to the Margins: Sources of Stress for African American College and University Faculty

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**Are Standardized Tests Fair to African Americans?:
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**Moving Beyond Black Achiever Isolation:
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A significant portion of the research on Black students focuses on those who are in academic difficulty. This study examined the experiences of high-ability Black collegians to understand their academic, social, and racial experiences. The findings of this study suggest that high-achieving Blacks may experience a different type of isolation from other Black students.

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This article offers a qualitative account of contemporary campus unrest. By analyzing five institutional case studies of student protest the author argues that a complex understanding of student activists of the 1990s must include knowledge of their role in creating multicultural reform. Identity politics is highlighted as a key student strategy.

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Contract Systems, Bureaucracies, and Faculty Motivation

The Probable Effects of a No-Tenure Policy

Introduction

As has been widely and hauntingly articulated in recent years, colleges and universities have come under increasing scrutiny from their various constituencies, who have been severely disappointed with a perceived less-than-satisfactory return on their investment in the institution of higher education. The finger-pointing from the outside overwhelmingly is directed at faculty who are allegedly underworked and overpaid. So vociferous have the external critics become that drastic measures to improve institutional efficiency are now being considered by state systems, boards of trustees, and top level administrators — the most serious of which is the replacement of the tenure system with short-term renewable contracts¹ that purport to force faculty to adhere to higher standards of accountability (*Chronicle of Higher Education*, 1996, pp. 21–22; Mingle, 1993). Although such proposals are not new (note the British precedents under the Thatcher/Major governments), the threat that there might now be adequate political power to institute them demands yet one more look — a fresh one — at the benefits and problems of tenure (Braverman, 1974; Winter, 1995; Trow, 1997).

The discussion that follows is set in the context of the more general problem of the increasing bureaucratization of professional activity in contemporary society (e.g., medicine), the effects of the substitution of bureaucratic rules for professional norms, and the more general social movement toward legalization (Stewart & Cantor, 1982; Van Maanen & Barley, 1984; Lieberman, 1983; Sitkin & Bies, 1994a).² The arguments should be viewed as considered judgments. The article is not supported

James L. Bess is professor of higher education at New York University.

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by a meta-analysis of published empirical data, because the latter are generally not available for higher education. Where possible, however, references to related phenomena observed and reported in the general social science literature are cited.

Past discussions of tenure in higher education generally have focused on two central domains: the relationship of tenure to academic freedom (Finkin, 1996; Menand, 1996; Benjamin & Wagner, 1994) and the impact of faculty beliefs about the likelihood of permanent employment on their motivation and productivity. The first issue is a critical one, but for reasons of space limitations it is not considered here. It should be clear, however, that contracts as potential weapons of management power, affect not only worker motivation, but, in higher education, the autonomy of thought, action, and expression that is protected by academic freedom.

This article addresses the second issue — the impact of contracts on faculty incentives to produce at high levels of quality and quantity. The focus here is on the organizational structural conditions that accompany tenure (versus contract) systems in academic organizations, on the associated motivational “climate” (i.e., norms and values) that inevitably is produced by either tenure or contract systems, and on the effect of alternative climates on faculty motivation and productivity.

What Are Contracts?

In the conceptualization of Chester Barnard (1938), employment constitutes a *quid pro quo* between inducements offered by the employer and contributions by the employee. It is highly “calculative” — one of the terms that Etzioni (1961) uses to describe employer-employee relationships in certain kinds of organizations. Tony Watson (1995) notes, furthermore, that employment always carries with it an element of uncertainty. It is, he says,

an agreement between unequal parties in which the employee, in the light of his or her particular motives, expectations and interests, attempts to make the best deal possible, given his or her personal resources (skill, knowledge, physique, wealth, etc.). The bargain which is struck involves a certain relationship (in part explicit but largely, owing to its indeterminacy, implicit) between the employee inputs of effort, impairment and surrender of autonomy and employer rewards of cash payment and fringe benefits, job satisfactions, social rewards, security, power status, career potential.

The bargain is essentially unstable, especially as a result of the market context in which it is made. (p. 295)

Contracts, then, represent both implicit and explicit calculated bargains between workers and employers. But they are more than simply premed-

itated, rational judgments. As Rousseau (1995) and Rousseau and Parks (1992) note, workers in bureaucratic organizations have a "transactional view" of employment, seeing it as a psychological bargain between employer and employee.³ Further, the psychological character of a contract is inevitably ambiguous, its terms created in the eye of the beholder. Thus, workers abide as much by the symbolic interpretation of the essence of meaning and value contained in contracts.⁴ A contract of "tenure," then, with its associated psychological undertones and overtones, carries a very different meaning than does a contract with "limited terms."

Many organizational theorists see contracts as a manifestation of social exchange theory (Wayne, Shore, & Linden, 1997). For example, as Rousseau and Parks (1992) note, control of work is optimally managed through external "markets" rather than "hierarchies" (cf. Ouchi, 1980; Stinchcombe, 1990, 194ff). In response to the uncertainties that organizations experience because of outside market conditions, contracts are instituted that specify expected outputs, the costs of carrying out the contract (e.g., salaries), and the means of resolving the ambiguity and difficulties in measuring the satisfaction of the performances set out in the contract.

Contracts can be short-, medium-, or long-term, each with different implications for workers and organizations. Very short-term employment contracts protect the organization from the vicissitudes of market turbulence by limiting the organization's obligation to workers when market downturns so reduce resource inputs that it becomes difficult to maintain steady organizational employment levels. Very long-term or permanent employment contracts make the organization more vulnerable to temporary overemployment. Although warranted financial exigency may result in some downsizing, the latter is difficult legally and politically to effect. Moderate length contracts protect the worker from peremptory job loss but also protect the employer from the obligation to continue employment regardless of economic conditions. In the absence of explicit contracts, implicit bargains (and norms for violating them) obtain and are guided by many factors, including specialized industry or field histories and norms and idiosyncratic organizational practices. "Tenure" in higher education constitutes a system of non-explicit employment contracts, but carries with it an implicit assumption of permanent employment.

The institutionalization of internal hierarchical control through short-term contracts leads to an increase in the frequency and salience of power issues. As Rousseau and Parks (1992) note,

Linked to a broader theory of social exchange . . . sociological treatments of contract emphasize that exchange creates status and power differences, one dimension of which is the organizational hierarchy. Asymmetries in

power reinforce asymmetries in exchange, where power is a function of the reliance or dependency of one of the parties on the other.

Thus, pressures to eliminate tenure and substitute internal hierarchical control through contracts will very likely result in an increase in hierarchical use of power and a reduction in collective and individual faculty independence.

Psychological and Motivational Implications of Contracts

This article is concerned with the effects of contract versus tenure systems on faculty motivation in the light of the above. The discussion below will demonstrate that contrary to external public opinion about faculty work habits, it is not the security of tenure that reduces faculty motivation and hence productivity. Rather, the explanation of low motivation lies in the absence of necessary organizational contextual conditions that build on the underlying requisite base support of tenure and thus induce strong motivation. These conditions include an organizational design that provides for (1) intrinsic satisfactions derived from the work itself; (2) communication mechanisms that permit peer generated productivity and quality norms to be continually salient; (3) multiple career tracks that lead to high status and respect; (4) the opportunity on occasion to take risks in new ventures without penalty; and (5) an expectation of trust and good will (Robinson, 1996). To do away with tenure will be to remove an essential prerequisite to the perception by faculty of the viability of these incentives in their academic lives. The insecurity of limited-term, hierarchically evaluated performance contracts and the symbolism of their meaning as noted above will push these other potential incentives to the background. As Deci and Ryan (1985, pp. 298–299) note, “reward structures that tend to be experienced as controlling also tend to induce pressure and tension and undermine intrinsic motivation, relative to structures that tend to be experienced as informational.” Contract systems control, therefore, ultimately reduce motivation.⁵ Such systems must be enforced through bureaucratic methods that are inherently demotivating, as will be explained below. Intrinsic motivation, which largely drives productivity in the academic sector (where work is complex and challenging) thrives in an atmosphere of freedom, provided informal norms support that productivity. Neither heavy-handed bureaucracy, on the one hand, nor total anomie/anarchy provides the leverage to induce faculty to work hard (Pelz, 1978; Pelz & Andrews, 1976). Strong motivation requires the security of tenure plus an array of incentives for which tenure is a prerequisite. Moreover, replacing tenure with contract systems will result in expensive, dissatisfying,

bureaucratically dominant features that in the long run will be more harmful than beneficial. Let us explore these hypotheses in some depth.

The Debate

The argument in favor of eliminating tenure is essentially that tenure — or the guarantee of lifetime employment — “demotivates” faculty and causes “deadwood.” That is, once faculty are assured that they cannot be dismissed except for gross malfeasance, they (allegedly) lose much of their motivation to produce. Further, the productivity of the system as a whole suffers when faculty are not fully committed both in spirit and time to the work of the institution. To improve the motivation of faculty members, it is necessary, so the argument goes, to institute a system whereby faculty are regularly evaluated, with the results of those evaluations being used as the basis for contract renewal. Faced with the periodic need to demonstrate their productivity and effectiveness, faculty will be forced to increase their attention and dedication to their duties.

A second argument for substituting contracts for lifetime employment is that system vitality as a whole will benefit from more interinstitutional personnel mobility, both within academia and between academia and industry. If colleges and universities do not have to risk committing themselves to 30-year-long, million-dollar institutional investments in individual faculty members, the institutions can offer inducements to “star” performers at other campuses to change employers for limited, production-contingent terms of service. Similarly, institutions will feel freer to offer short-term contracts, rather than permanent employment via tenure, to persons in the corporate world, thereby bringing the fresh and relevant new ideas of the marketplace to what may have become a stale ivory tower.

The strength of the idea of limited, but renewable, term contracts has been significantly increasing of late in the United States. An “assessment movement” has taken hold, and new requirements for hard evidence of faculty productivity have been introduced both at the state level for public institutions and in private colleges and universities, in part through the insistence of the regional and professional accrediting agencies (Tierney & Rhoads, 1995; Chronicle, 1993). More particularly, as the U.S. economy levels off⁶ and with political conservatism dominating state and federal legislatures, the public has become much more demanding in its expectations of higher education. Funding agents such as parents and the public (through its state legislators) faced with college graduates whose basic skills seem to be insufficient to permit them to find good jobs, seek the causes of those failures. Increasingly, they are

looking at college faculty and insisting that colleges and universities hold their faculty more accountable for high quality productivity, especially in teaching.

The colleges, in turn, are beginning to institute systems of evaluation that purportedly will identify faculty who are not pulling their weight. Contract advocates, however, argue that because tenure in the United States protects faculty from dismissal except for reasons of moral turpitude, financial exigency, or gross poor performance, administrators presently have (or, more properly, believe they have) limited tools to take action to force faculty to be more productive, even with evidence of poor performance. If tenure were eliminated, they say, administrative power would be greater, because nonrenewal of short-term contracts (or the threat of it) by administrators would be more politically feasible and practical than the cumbersome mechanisms necessary to remove a tenured faculty member.

Finally, it is argued that productivity norms might actually operate more effectively if tenure were eliminated. It might be, for example, that local, ambiguous norms of faculty teaching productivity might actually be raised when hard, empirical evidence of low productivity is made available among the faculty. Because "free riding"⁷ is antithetical to effective working communities, no faculty member, it is argued, will want to take the risk of being labeled as less productive than the newly visible group norms demand. Hence, faculty control over productivity will be maintained, but hard data will replace informal discussions based on hearsay evidence as the basis for setting standards and holding colleagues to them.⁸

- Given these amorphous academic work technologies and procedures, the pro-contract advocates believe that bureaucratic evaluative modes of accountability and enforcement are more likely to improve faculty motivation. In the discussion below, we will attempt to demonstrate the fallacy of this position and to illustrate the greater wisdom of revising and strengthening an organization's structure so that it generates a positive motivational climate and one that encourages and supports high productivity norms in contrast to the negative climate bred by contracts.

The Efficacy of Bureaucratic Controls in Higher Education

Will the institutionalization of evaluative systems under a contract system result in higher performance standards that can and will be enforced by faculty and administrative rules and procedures to increase motivation and productivity? While certainly no one would disagree that faculty need to be held accountable and that high productivity standards

must be generated and maintained, there is some considerable doubt that the imposition of the elaborate bureaucratic system that contracts require will have the desired effect. There are three reasons, which will be elaborated below: (1) the value underpinnings of contracts and bureaucracies, (2) the sources of professional motivation, and (3) administrative expense.

The first reason has to do in general with the ways that human social systems control the behavior of their members. There are essentially three: by hierarchical control, where authority is vested in positions, tradition, or charisma; by lateral, peer-oriented control, where authority is shared by those presumed to possess roughly equivalent knowledge and expertise; and by some combination of these, often in formally structured matrix form or through some informal collaboration mechanism.⁹ In academia, as in many professions and in contrast to the corporate sector, informal, normative constraints and incentives play a much larger role than formal sanctions and rewards in directing behavior. Peer group standards and the enforcement of those standards by subtle peer pressure constitute the primary means of ensuring compliance to expectations of productivity (high or low). Unfortunately, in the field of teaching in higher education, especially in the context of a departmentalized organizational structure, the enforcing ambience of peer norms is virtually invisible. Faculty usually work alone as teachers or in very small groups over their entire career. In contrast to the more cosmopolitan networks for research and publication, faculty as teachers have little opportunity to apprehend or directly experience the values of external professional colleagues and to be guided by them.

In the larger community, societies institute laws that codify desired behavior, then develop structures to ensure that citizens abide by those rules. But adherence to the law depends as much or more on the voluntary agreement of citizens not to violate laws because (1) citizens have been socialized to believe in the morality and practical utility of the laws, and (2) they want to avoid the opprobrium of peers for disobedience (Weber, 1947; Parsons, 1960, p. 121). An excessive reliance on external enforcement results in a police-like state that generates a culture of coercion, further engendering a perpetual personal anxiety in citizens. As Pfeffer notes, "The legal process is, at its core, adversarial. In a similar fashion, the legalization of the employment relationship inside organizations institutionalizes and legitimates conflict" (Pfeffer, 1994).

At the organizational level (in this case, the university), laws are manifested in the historical evolution of bureaucratic rules and regulations developed by successive administrations and faculties. Even when collaboratively determined, however, and in the presence of high levels of

consensus, bureaucratic rules inevitably evoke internal organizational values that contrast strongly with the values that are typically present in "purely" professional organizations.¹⁰ The values of bureaucracy, in contrast to more democratic values, are more sharply defined and clearly manifested, especially when administrative regulations in colleges and universities are imposed through mechanisms of power and authority rather than collegial decision making (Bess, 1988; 1992).

Furthermore, as is well known, colleges and universities are not (or, at least, have not been) exclusively bureaucratic. Depending on the type of institution (e.g., community college versus private, elite university), academic matters are determined through democratic structures organized and administered by faculty as professionals in "professional bureaucracies" (Hackman, 1976). All professional organizations depend primarily on self-regulation and peer, rather than hierarchical, control. The standards of professional behavior, inculcated during education and training, are presumed to be firmly implanted as *intrinsic* standards. Further, the commonality of those standards allows peer systems of professionals to agree when there is apparent deviance.¹¹

Importantly, there is a different set of basic critical values about human nature and about human societies that inhere in flat, lateral, peer-dominated, professional systems. They are in sharp contrast to values found in hierarchical systems. The contrast is between forms of organization that are "communal or collegial [sic] and rational or administrative" (Van Maanen & Barley, 1984). Collective societies of professionals are Rousseauvian in philosophic underpinnings. They carry with them assumptions of good will, trust, and commitment to work, colleagues, and institution. That is, social systems of collaborating individuals expect that most members of the system will act according to *professional* standards and will make contributions in accordance with individual abilities. Although imperfect and not infrequently violated in practice, these assumptions of professionalism constitute an important determinant of the quality of interpersonal relations in professional organizations. In colleges and universities, the looseness of the expectations of performance following the granting of tenure allows faculty psychologically to infer the continuing benevolence of the institution, indeed, even its beneficence.

The assumptions about human nature of a renewable contract system, on the other hand, are quite different from those in a lifetime employment system. They are Hobbesian in character, in that human beings are assumed to be essentially malevolent and self-serving.¹² In practice, such assumptions breed negative or captious or even punitive dispositions among workers. Formal contracts are legal mechanisms intended

to encourage compliance under the conditions of the contract and, importantly, to permit legally sanctioned administration of punishments. The structure reflects the underlying values; it also intensifies them. As Rousseau and Parks (1992) note:

1. Contracts create organizational hierarchies and roles.
2. Contracts give rise to power asymmetries.
3. Contracts are influenced by differences in power, creating unequal bargaining positions.
4. Each contract is part of a larger set of exchange relationships.

In higher education the structure thus changes the terms of the psychological contract as interpreted by the faculty. As Hofstede¹³ notes,

In individualistic societies the relationship between employer and employee is primarily conceived as a business transaction, a calculative relationship between buyers and sellers on a "labor market." Poor performance on the part of the employee or a better pay offer from another employer are legitimate and socially accepted reasons for terminating a work relationship. (Hofstede, 1991, p. 64)

"Collegial" organizations, however, are presumed to be collectivist, with "mutual obligations of protection in exchange for loyalty" (Hofstede, p. 64). Academics who are "locals" believe this more strongly than those who are "cosmopolitans" whose loyalties are divided between inside and outside. "Contracts" will destroy the collegiality of a local culture by forcing competition among formerly collaborative faculty. As Selznick notes,

. . . The argument speaks to broad trends in industrial organization as they bear on major issues of law and jurisprudence. Among these is the intrinsic conflict between the premises of contract and those of association. The logic of contract runs up against the logic of sustained cooperation. (Selznick, 1996; cf. Blau, 1993)

Contracts may encourage cosmopolitans further to abandon their already limited commitments to their institutions by encouraging them to seek rewards from outside. They can thus fulfill the weaker "contracts" that academic publishers have with professional colleagues in the outside, wider disciplinary community. This external "market" mentality (Ouchi, 1980) will further vitiate the desired closeness of a collegiate "clan" as a prevailing organizational climate — a climate already compromised in most decentralized research universities.

Furthermore, because contracts assume that there are differences in ability and performance among workers, they also imply that there are gradations in the commitment of workers to their organizations and co-

workers. They presume that some, if not all, workers are lazy, need to be coerced, and made to *fear* negative consequences (instead of being induced by positive incentives) (Fama, 1980). Workers must be watched, evaluated, and explicitly (publicly) punished for failure (McGregor, 1960). These assumptions, when manifested in practical evaluation and enforcement terms, may in fact uncover some few faculty who are indeed lazy and unproductive. It would be naive to assume that there are not some human beings who deviate from group norms, although this is probably more true in the profit-making sector where a tradition of distrust has created a self-fulfilling prophecy among workers — especially in unionized settings. The question is whether it is sensible to build a motivational or incentive system around the habits and proclivities of this small minority. If bureaucratic contract systems are imposed, the result may be a system in which faculty behavior follows a self-fulfilling prophecy. With the expectation of others that they are lazy, many more faculty will try to find ways to be *minimally* successful simply in order not to be punished. They will not do their utmost to achieve their highest level of creativity and productivity. As is commonly known about bureaucracies, the *average* level of motivation of the system as a whole will diminish. The lowest common denominator of acceptable productivity will become the norm. In Herbert Simon's well-known terms, faculty will "satisfice" (Simon, 1957). They will seek the first acceptable solution to problems of teaching and research, instead of searching for optimum solutions. Though they will also rely on group norms as guidelines, those group norms, or averages will be lower than in a meritocratic system with lifetime employment. Further, because as noted above, structure drives values, a climate of distrust will pervade the system and will make most participants defensively competitive, secretive, paranoid, and unhappy, further contributing to lowered effectiveness. As Adler and Borys note, not all bureaucracies are necessarily bad, but the forces that encourage them to be "coercive" outweigh those that might make them "enabling" (Adler & Borys, 1996).¹⁴ As Alpander (1991) notes,

The prices we pay for worker alienation are staggering: underproduction, poor quality, sabotage, turnover, absenteeism and alcoholism. Clearly, motivating workers remains one of management's primary concerns and one of its most difficult tasks.

On occasion, of course, assumptions of good will, honor, responsibility, and professionalism will be misplaced in the presence of inevitably imperfect peer sanctions. "Ambient stimuli" (Hackman, 1976) — messages communicating norms of behavior — on occasion will not enter

the consciousness of some faculty, and faculty as a whole may be reluctant to express norms when that expression appears evaluative or/and confrontational. As noted above, the structure of academic work in colleges and universities often prevents peer groups from acting on their values. As a result, some relatively small number of persons may escape and may take advantage of the situation by coasting on the coattails of colleagues' hard work and achievement.

The damage to the system as a whole, however, is relatively minor. Most workers depend on and benefit from the security of employment to satisfy basic needs. Anxiety about work over a long period seldom leads to high productivity (though it may ensure average productivity at some psychological cost). Usually, given other incentives that bolster high standards and support peer monitoring, the majority of workers can be counted on to be productive throughout their employment lives. With lifetime employment in the Japanese corporate world, for example, workers rarely suffer a diminution in motivation, because, importantly, other critical motivational forces are in place (Smitka, 1994). In general, as sociologists tell us (Parsons, 1951), human systems work best when the collective elements in the system (e.g., corporations or educational organizations) take on the social burden of variance in individual human motivation and productivity, leaving individuals feeling more secure and hence better able to concentrate on more challenging and demanding tasks. A complex system with human resource redundancies, in other words, is better able on the whole than its individual members to absorb organizational uncertainties in predicting productivity. Collectivities, as entities with merged and offsetting individual psyches, are less vulnerable than are individuals; hence, they can better provide for the individual security needed for high system output, especially when the system is subject to fluctuations in levels of environmental turbulence (e.g., budget uncertainties or/and vicissitudes).¹⁵

Public Perceptions of Productivity

How can we account, therefore, for what is alleged by the public to be a breakdown in the motivation (and hence productivity) of faculty in higher education? Part of the problem lies in the public's confusion about research and teaching productivity. The argument that there is a drop-off in productivity following the tenure decision refers primarily to research output reflected in publication. The literature reveals, however, that although there are significant differences among faculty in productivity rates across different kinds of institutions and throughout the career, there seems to be no apparent reduction in productivity after tenure

is granted (Blackburn & Lawrence, 1995; Blackburn & Havighurst, 1979; Blackburn, 1985; Blackburn & Lawrence, 1986). In other words, there may be low productivity (and the motivation to produce), but among those faculty who begin as high publishers there is virtually no change in productivity rates after tenure.

What can be said about teaching productivity pre- and post-tenure? Again according to Blackburn and Lawrence (1995, p. 204), in an empirical study of faculty, "Neither rank nor career age predicted percentage of time given to teaching," and "Our results do not support the earlier research finding that there is a positive relationship between age and effectiveness, interest, or effort in teaching (or research)." One would assume that age and tenure are highly correlated. Hence, it is reasonable to say that after tenure faculty on the whole are no less interested in or committed to teaching than they were prior to receiving tenure (though, of course, interest and effort for any faculty member may wax and wane throughout the career).

Nevertheless, despite this evidence to the contrary, there is a persistent belief that the guarantee of permanent employment that comes with tenure results in a diminution of motivation to teach and of teaching productivity. It is likely that in the public eye, the visibility of some long-tenured faculty who are not productive generates the argument that it is the tenure system that makes them so. (The public is not aware that the low achievers may always have been less productive.) In point of fact, as has been noted earlier, the low productivity and low motivation of some faculty result from other contextual factors in the institutional environment. The granting of tenure (the guarantee of lifetime employment) does not alone influence productivity. It is a necessary but not sufficient condition for strong motivation. For tenure to serve as a stimulus to productivity, there must be rewards and sanctions that reinforce the basic human values that laterally dominated social systems embody. Tenure ensures that basic security needs are satisfied; it alone does not offer incentives (or disincentives) for performance. These are provided elsewhere. In the terms of Herzberg, Mausner, and Snyderman (1959), tenure is a "hygiene."¹⁶ It only prevents dissatisfaction. It is not a "motivator" (or a "demotivator"). Motivators are intrinsic and extrinsic stimuli in the work environment and in the individual that answer basic human needs for achievement, responsibility, recognition, status, competency, personal growth, and satisfaction from the work itself. If these stimuli are not present in the educational system, then faculty will not be motivated, regardless of whether tenure exists or does not. Only if the security of tenure is in place, however, can these other motivators become operative. Lacking sufficient motivators, even if tenure is the policy, fac-

ulty may lose their motivation. In sum, it is not the tenure system that causes low motivation but the presence or absence of other conditions of academic work.

The Culture of Meritocracies in Tenure Versus Contract Systems

In all meritocratic systems, high merit individuals are rewarded for excelling in the short term at higher levels than their colleagues. Compensation is norm-referenced, rather than criterion referenced. Rewards are based, in other words, not on absolute standards of achievement but on achievements compared with others. Colleges and universities in the United States are predominantly meritocratic systems. Some kind of annual merit evaluation typically results in differential annual salary adjustments depending on performance (more so in private institutions). Most Americans approve of merit evaluation systems, because they recognize individual achievement and offer the promise of higher status and better life styles based on talent and hard work. There is an especially malevolent downside risk to any merit system that is based on potentially nonrenewable contracts rather than on the assumption of continuous employment as in a tenure system.

By definition, merit systems do assume, anticipate, and encourage different levels of performance. Regardless of the context — contract or tenure — peer-generated, locally norm-referenced (versus externally established criterion-referenced) reward systems generate a culture of differentiated expectations with a built-in hierarchy of gradations in disappointments and satisfactions. When faculty do not receive expected salary increases, emotional reactions of several kinds result. Those faculty who think they deserve higher levels will be unhappy at not receiving them (Adams, 1965; Weick, 1966). Those faculty who performed competently, but “comparatively” poorly will be unhappy at being labeled not exemplary. Faculty who do receive higher salaries, while enjoying the reward, will find that the approbation of their colleagues will be mixed with resentment and jealousy. Indeed, a climate of jealousy, envy, captiousness, with a variety of counterproductive behaviors (e.g., withholding information, stealing, even sabotage) may emerge.

The difference between normative merit systems operated in peer-dominated conditions versus hierarchically based, punishment centered, short-term contract systems is that in the former the resulting dissatisfactions of low performers are “cooled out” by the peer group. The salary differentials are generally hidden, thus protecting low salaried faculty from the invidious comparisons of openly differentiated status. In contract systems, on the other hand, those who perform below the

norm (or, who think they do (McKeachie, 1997)) come to resent the system. More important, the threat of nonrenewal of contracts in the face of manifested inferior performance intensifies the anger and disaffection with the system.

There is still another downside effect of the psychology of contract systems. As Hirsch (1976, pp. 81ff) notes, commercialized, market systems tend to diminish and undervalue the social contribution that workers are willing to and actually do make. The satisfaction of altruistic needs through the provision of uncoerced labor is not forthcoming under a system that essentially "buys" the products produced or services performed by faculty members through contracts.

Common and Uncommon Needs and Rewards

But critics of this view might argue that there are different levels of productivity among faculty and that a value system that rewards differentiated productivity is, after all, moral and proper. That is, those who produce more or/and at higher quality should receive more formal organizational rewards. Does it not make sense, they would suggest, to institute a system that openly recognizes better performers?¹⁷ The answer is that different levels of productivity *within* the same institution usually occur not because there are different levels of ability among employed faculty, but because the institution's reward structure has failed to provide the necessary incentives to maintain commitment and hard work. The fact of the matter is that virtually all faculty members hired by a particular institution are *assumed* at organizational entry to have approximately equal levels of potential to contribute to the institution. Hence, assuming relatively equal levels of faculty talent and ability in each institution, if motivation systems (including a sufficient variety of incentives) are working properly, all of the faculty "should" be producing at roughly equal levels.

For example, consider the basis for the original employment of any faculty member at an institution of higher learning. As is well known, the process of recruiting, selecting, and hiring faculty is a long and arduous one, requiring much time and effort by faculty (and administrators in the United States). One reason is that picking a colleague is somewhat like picking a spouse, because it is expected that the new person, when integrated in a closely-knit functioning department, will share profound lifelong professional (and oftentimes personal) issues, problems, feelings, and satisfactions. Hence, it is critical that a person be found who is compatible. The assumption, however, is always that the person selected will not only fit in, but that he or she will be able to produce at a quality

and quantity level that is commensurate with if not greater than the norms existing at the hiring institution. Most faculties do not pick scholars who exceed the standards at the institution because their higher productivity is likely to embarrass the older faculty, and they do not select scholars unlikely to produce up to standard, because low productivity will not bring sufficient credit to the institution and hence, by proxy, to them. In other words, most faculty hire future colleagues with the expectation that their productivity level will at least measure up to the extant standards. The careful scrutiny of the candidate's documents and records and the extensive solicitation of information from the candidate's present and former colleagues are designed to assure that the person to be selected is capable and has a record of performance that will be sustained after being hired.

In sum, low productivity cannot be ascribed to differences in ability levels (except where the institution has made an error in hiring). In the face of unexpectedly low productivity for some faculty, therefore, the question must be asked as to what caused performance to deviate from the expectation at the time of employment. Is it because faculty have tenure (lifetime employment)? Or is it because the other system rewards and sanctions are not part of the existing academic structure? The argument here is that the latter is more plausible. Homogeneity of faculty talent levels would suggest that individuals would be equally susceptible to employment conditions that are imaginatively designed to motivate them.

Bureaucratic Expense

Finally, in a contract system, especially one in which review is required every five years, an elaborate and expensive bureaucracy must be employed to carry out the evaluations and to enforce them. At present, after tenure, only one evaluation need be conducted — to determine suitability for promotion from associate professor to professor. Assuming that tenure is granted at age 35 and a career ends at age 70, evaluations every five years will require seven separate evaluations — in contrast to the currently required single one.¹⁸ The faculty will be required to engage in time-consuming preparation of papers. Faculty committees will have to be formed to evaluate the papers. Review and appeal committees will need to be instituted to address grievances. Records will have to be kept in order and procedures regularized and periodically reevaluated. Indeed, it is quite likely that institutional goals will in some degree be displaced by the goal of attending to the rules (Gouldner, 1954). In sum, a nontenure system will result in lower average produc-

tivity, a more dissatisfied faculty, and higher costs (Meyer, 1975; Kerr, 1975; Hackman & Wageman, 1995; but see also Podsakoff, Williams, & Todor, 1985).

Absent organizationally designed and mandated opportunities for (1) continued intrinsic satisfactions through the work itself, (2) peer communication, if not approbation, (3) a clear avenue to higher status and respect over the course of the career, and (4) the chance to shift intellectual directions on occasion without penalty, and (5) an expectation of trust and good will, some, if not most faculty will lose motivation. The fault clearly is not lifetime employment but the missing intrinsic and extrinsic rewards that ought to be provided by an organizational structure that recognizes basic and unique human needs and the requirements for growth and development over the life span.

If there is evidence that the present tenure system is not working as it might, is the cause the guarantee of lifetime employment? To find the answer, it makes much more sense to examine the conditions that may or may not motivate faculty throughout the lifelong term of employment than it does to question the term of employment itself.

Finally, it is somewhat strange that colleges and universities are now being asked to consider formally recognized *periodic* evaluation when many management gurus are now calling for "continuous quality improvement" or "TQM" or "CQI" (Marchese, 1995; Ciampa, 1992; Lawler, 1994; Hackman & Wageman, 1995). Essentially, TQM means that all employees are trained to be involved *continuously* — i.e., perpetually scrutinizing their performance, rather than doing so only periodically at the end of their contracts. In Japanese industry, for example, although "quality circles" have not always been successful, the effort to engage employees in regular, sustained self-evaluation has been widely followed. Hence, a proposal in higher education to institute not continuous quality improvement, but recurrent (e.g., five-year), externally mandated requirements for self-evaluation is at odds with contemporary management philosophy and with the success of continuous forms of evaluation that work in industrial settings.

Summary

The argument in this article is that the system of tenure, or lifetime employment, may seem as if it were the cause of poor motivation and hence underproductivity in higher education. But that appearance is misleading. In point of fact, tenure is the system's mode of absorbing and dealing with the individualized anxieties of a social system. It is much more likely that other extant features of the academic employment and

reward system are responsible for undermotivation. The absence of an academic structure that provides sufficient intrinsic and extrinsic motivating rewards is the problem. Moreover, the success in the corporate sector of lifetime employment and continuous quality improvement can be mirrored in higher education by appropriate organizational structures and culture. It would be far more sensible to improve the conditions for making tenure successful — new kinds of academic organizations, peer review procedures and peer sanctions, and better interinstitutional mobility — than to replace it with a contract system whose negative consequences in the long run will be much more damaging than the short-term benefits that may result.¹⁹ As William Cotter (1996) has noted,

In virtually every case, the granting of tenure has liberated that faculty member to become an even more productive and important contributor to the quality of academic and campus life, and her or his finest scholarly work is usually produced after the tenure decision, not before. Tenured faculty members are motivated by a pride in their profession, a sense of responsibility, and a recognition that they are the real “owners” of the college.

It behooves institutions to find ways to sustain these sources of motivation, not undermine them by removing the security of tenure.

Notes

¹Note that this discussion of “contracts” refers to employment contracts, not civil contracts drawn up between parties to a business arrangement.

²In a larger sense it reflects the cycles in advanced, industrialized, technocratic, democratic societies in which power generates first a hierarchical ordering of status and benefits based on the salience of utilitarian knowledge and expertise and then an egalitarian countermovement based on social equity norms. The switch from tenure to contracts represents a philosophical shift from democracy and egalitarianism to a hierarchy of class and power asymmetry — even exploitation. It can be considered a not so subtle, neo-Marxian, attempt by a de facto owner class in certain social agencies to assert their power and to solidify it by legal means.

³As Morrison and Robinson (1997) note, the idea of a *psychological* contract was first explored in some depth in the early 1960s by Levinson, Price, Munden, Mandl, and Solley (1962) and by Schein (1965).

⁴As Smitka (1994; cf. Adler, 1993) notes, the Japanese economy “is best characterized as functioning without contract. . . . Let it suffice that Japan demonstrates that it is possible to have a complex, vigorous economy without contract law and associated legal institutions playing a central role.”

⁵When work is routine, bureaucratization (especially rules) serve the latent function of protecting workers from intrusions of superordinates into areas not covered by the formal job description (Gouldner, 1954). But academics traditionally perform in a peer evaluative setting where control comes via post-hoc assessment. Academia does not usually anticipate error by controlling inputs or procedures (Mintzberg, 1983; Hardy, Langley, Mintzberg, & Rose, 1984), though there is variation depending on Carnegie classification.

⁶The actual state of the economy is debatable, but there is evidence that from the perspective of the common citizen, there is less money to go around, hence, more stringent

expectations as to the use of public funds for state institutions or tuition paid to private colleges and universities.

⁷"Free riding" refers to particular individual members of groups who receive the full and equal benefits of group membership without contributing equal effort to the production of those benefits. They are able to "hide" from management because high group productivity tends to reduce management concern and attention to individual achievement (Albanese & Van Fleet, 1985).

⁸The assumption, of course, is that group norms and management standards overlap, a concept of limited validity as the long history of research on organizations — viz. the Hawthorne studies — has shown.

⁹Philip Selznick noted some years ago that administrative theory does not yet exist that explains the reconciliation of the organizational needs for expertise and the exercise of its authority with the organizational need for "legal" oversight (Selznick, 1996).

¹⁰The argument that follows borrows from the Marxist position that structure ineluctably generates values, rather than the opposite. Here, it should be noted, however, that there is no implication that the present structure serves to perpetuate any one class over another (though exploitation of students by faculty is not an unknown phenomenon).

¹¹The discussion here centers on performance standards, not disciplinary paradigms. In high paradigm disciplines there tends also to be epistemological consensus on definitions of "truth" and on methods to determine that truth, whereas in low paradigm disciplines truth is more ambiguously defined. Nevertheless, the canons of professional conduct obtain in both settings.

¹²This was not always the case. As Selznick (1969) notes, until the end of the 19th century, the "law of employment" was predicated on the assumption of "master and servant," where the assumption was that a "contract at will" would govern an indefinite period of association between worker and employer (p. 134). With the rise of the industrial revolution, a "prerogative contract" — evolved as the legal paradigm and gave management absolute discretion over the employment relationship and the conditions and expectations of work. Now, the "master" no longer was constrained by community expectations of benevolence. As unions emerged and grew in strength (including the AAUP in higher education), the normal contract changed to a "constitutive contract." Here, a more adversary relationship obtains. (See also March & Olsen, 1996.)

¹³See also Etzioni's (1961) distinction among normative, utilitarian, and coercive organizations in the forms of control used.

¹⁴See also Gouldner's (1954; cf. Mintzberg, 1979) similar distinctions among "punishment-centered," "negotiated," or "mock" forms of bureaucracy.

¹⁵That societies frequently do not acknowledge such commonsensical notions can be attributed to the "tragedy of the commons" — the mindless self-aggrandizing behavior of individuals that depletes the common good (see Garrett Hardin, 1968). This is not to suggest that strong, competency-based ego is unimportant to individual sense of security. It is only to recognize that organizations can better protect individuals from the buffeting of the environment, especially in periods of recession.

¹⁶Herzberg, Mausner and Snyderman did not presume that hygiene presence is a prerequisite to motivator activation (as, for example, do Maslow, Alderfer, and others), but their model did not include the latent effects of organizational climate on individual perceptions of motivators.

¹⁷The answer to this notion goes beyond the scope of this article but reflects some assumptions about the nature and extent of similarities and differences in human needs and personalities across individuals. For this article the argument is that a common set of basic human needs inheres in all individuals, while both a diversity of idiosyncratic, higher-order needs and the opportunities to satisfy them also exist.

¹⁸Some fast-food firms in the United States recognize the necessity to balance costs of control against losses from unscrupulous customers. The system of allowing cus-

tomers to serve themselves soft drinks presumes that while there will be some who abuse the system by taking more than they are entitled to, the cost of policing the system or of controlling the drink service by having employees measure the drink volume is far greater than the theft by the minority of the public who deviate from the norms of the honor system.

¹⁹As Sitkin and Bies note in agreeing with Philip Selznick's cautions about the infusion of a legalistic mode of governance in an organization, "Sometimes this process of infusion involves the adoption of an effective administrative technique, while other times it involves the adoption of the trappings of law in a context for which those trappings are largely inappropriate" (Sitkin & Bies, 1994b).

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Beyond Boyer's *Scholarship Reconsidered*

Fundamental Change in the University and the Socioeconomic Systems

The task for a modern industrial society is to achieve . . . a society which is really based on free voluntary participation of people who produce and create, live their lives freely within institutions they control, and with limited hierarchical structures, possibly none at all.

Noam Chomsky

Introduction

There is considerable debate over the meaning of scholarship with much of the impetus coming recently from Boyer's *Scholarship Reconsidered*. Boyer's (1990) challenge to himself was "to define the work of faculty in ways that enrich, rather than restrict, the quality of campus life" (p. 1). He suggested that "[at] the very heart of the current debate — the single concern around which all others pivot — is the issue of faculty time. What is really being called into question is the reward system and the key issue is this: what activities of the professoriate are most highly prized?" (p. xi).

In this article we argue that, despite Boyer's well-intentioned efforts to foster debate and discussion about scholarship, his analysis fails largely because he ignores the socioeconomic context of universities and

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the purposes universities have historically served. Boyer (1990) never fully addresses the questions "most highly prized by whom?" and "most highly prized for what?" Nor has he identified the most salient issue concerning change — the organizational (social) structure of the university itself.

Boyer assumes the reward system to be a necessary part of scholarship. He and others in education have ignored almost thirty years of research and theory which show that rewards (and punishment) are more closely connected to the control of others than to an increase in quality of instruction and research. As such, rewards of this type have deleterious impact upon things putatively valued in education, including production, self-actualization, and intrinsic motivation. Without denying the importance of "acknowledgment" and economic security, we take the opposite view and suggest that rewards support the structures of domination. It is these authoritarian structures themselves which put restriction on scholarship and therefore are in need of change. Although we use the important work of Boyer as impetus for this discussion, this article is aimed less specifically at Boyer, except to provide contrast. Rather, it is more of a general prolegomenon pointing toward an alternative approach to bring about needed changes in the university.

Our harsh criticisms of Boyer notwithstanding, we are sympathetic to some of his aims. However, the reward system Boyer emphasizes is, at least partly, the result of a belief in the need for external control. By contrast, we emphasize intrinsic motivation of learning and teaching facilitated by students and faculty having real choices — real academic freedom, and real socioeconomic security — as a more appropriate manner of facilitating scholarship.

In order to address these broader issues we begin with a brief description of our general systems theory approach and the conceptual model derived from it. We suggest that the three elements of goals, context (social structures), and system attributes interact mutually and reciprocally to determine the functional outcomes and patterns of behavior of any open complex system. We then apply this conceptual model in an examination and critique of two contrasting organizational styles, namely, authoritarian (hierarchy) and participatory democracy (heterarchy). To make our case, we attempt to present an encompassing picture by weaving in numerous theoretical threads. But to do so within a limited space requires a sacrifice of some details. However, many of these details are presented elsewhere in the many references we provide.

Our analysis of U.S. universities derives mainly from general systems theory (Bailey, 1994; Chase-Dunn, 1989; T. S. Smith, 1992). In explaining a complex system, an attempt is made to identify qualitative features

of complex systems in order to capture the underlying dynamics. Thus, we begin with a global description of organizational style, rather than a search in the myriad of details. We identify hierarchical structure — dominant-subordinate relationships — as the primary feature of nearly all social systems, including universities, where wealth, knowledge, and power flow upward (Asante, 1990).

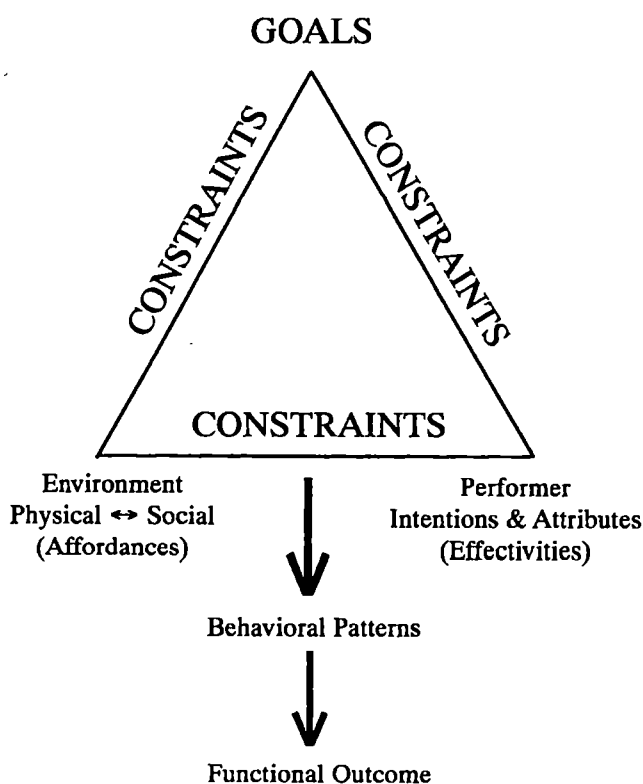
Borrowing from the work of Newell (1986), Davis and Burton (1991), and Flint (1994), we developed a global model (Figure 1) we believe applicable to all intentional open complex systems, including university and socioeconomic systems. The model indicates that goals, context, and attributes are the necessary and sufficient elements for determining the behavioral patterns and functional outcomes of any intentional system, whether biological or social. It is global because the elements are very general. In this section we first present the main features of the model and then present a general theoretical description of each of the three elements. In the subsequent three sections we apply the model to the issue of how universities and socioeconomic systems are currently organized (hierarchically), and contrast them with a proposed alternative style of organization (heterarchical). We conclude by discussing the implications of our model.

General Systems Approach

Features of the Global Model

Mutual and reciprocal. We briefly consider five general and related features of our global model (Figure 1). One is the mutual and reciprocal relationships between the elements. Indeed, all subsystem interactions of complex systems are mutual and reciprocal. Mutualism is a concept used variously in psychology and sociology as well as in biology and politics (Dewey & Bentley, 1949; Still & Good, 1992). There are more advanced accounts (Kugler & Shaw, 1990; Gemmill & Smith, 1985; Gibson, 1979), but for our purposes here it is sufficient to note that mutuality and reciprocity imply a “thoroughgoing interdependence between entities” (Leudar, 1991; Still & Good, 1992). However, Kugler and Shaw (1990) note that interactions occur at “cross-scales” (micro-macro) as well as at the same scale of time and space.

Human actions are conditioned by multiple nested context. The world is a nesting of complex systems, stretching across several layers of time and space. Each system is a multiplicity of parts, all connected but irreducible one to another. Both social and natural phenomena are products of this plurality of structures. It follows from this that “social life is emergent from nature, which is understood as stratified into a number of



Source: Adapted from Davis & Burton, 1991; Newell, 1986.

FIG. 1. Global Model

layers of causal determination (e.g., physical, chemical, biological, social), each of which is subject to the laws of the more basic level while also remaining irreducible to them" (Isaac, 1991, p. 5). However, it is important, as Bhaskar (1989, p. 3) notes, that such structures may be hierarchically ranked in terms of their explanatory importance. Such an approach is necessary to avoid the pitfalls of determinism and an undifferentiated eclecticism.

Connectedness and distinctions. A third and related feature of the structured pluralism model is the recognition of both strong connectedness and distinctions among not only the three general elements of the model but of all subsystems of any open complex system. By connectedness we simply mean causally related, and by distinction we mean irreducible one to the other.

Constraint. The fourth concept is that of constraint, which means both a limitation and an enablement (Kugler & Turvey, 1987). For example,

the physical surface (e.g., water versus land) enables certain kinds of locomotion but prevents other types, mutually depending upon the desires and attributes of the locomotor. This notion of constraints alters the view of causality.

Multiple and mutual causality. Causality in open complex systems is nearly always mutual and always multiple, but rarely simply linear. Given the complex nexus of causal interactions and context conditioning in open systems, both physical and social laws are seen more as tendencies (Bhaskar, 1989). As we shall elaborate, biological systems have on-board energy and are thus not tied to energy gradients, as are inanimate objects. Human actions are guided by physical and social laws but not determined by them. It follows from this that social Darwinism, as well as determinism, is rejected. It also follows that complete free will must be rejected, because there are always constraints, and constraints limit as well as enable.

To anticipate what is to follow, we note that the goal of accumulating material wealth in the context of a hierarchical social structure influences an individual's desire for power, privilege and self-determination toward characteristics of greed and selfishness, which in turn produce inequality and conflict with others. But power and independence, when constrained by a heterarchical context and goals of freedom and harmony, lead more to sharing, cooperation, and egalitarianism (see Hinde & Groebel, 1991, and our discussion below). Thus, when the focus of the scientific inquiry is upon system attributes at the expense of goals and context, as is the case with Boyer's focus on faculty rewards, the results are often misleading. Therefore, the importance of our macro analysis and Boyer's (1990) failure to apply such analysis to scholarship should not be minimized (e.g., Chase-Dunn & Hall, 1994).

*Context (Affordances): Social Structures, Systems,
and Institutions*

The first element of the global model we consider is context. For brevity we restrict ourselves to social context. An analysis of the social context in which universities and, in turn, university personnel are embedded, entail a formal description of social structure, social systems, and social institutions. For this we turn to Anthony Giddens's theory of structuration (1979, 1976/1993, 1984), supported philosophically by Bhaskar's (1989) transcendental realism. Social structures are defined as "regularized practices" of social life. Structure refers to properties "understood as rules and resources, recursively implicated in the reproduction of social systems" (Giddens, 1979, p. 64). Social systems and social institutions are made up of social structures but are more "deeply lay-

ered" in terms of the historical duration of the practices they recursively organize and the spatial "breadth" of those practices (Bailey, 1994; Giddens, 1979; Manicas, 1980; New, 1994; Shotter, 1983). As Giddens (1976/1993) states, "The concept of 'structure' presumes that of 'system' since it is only social systems or collectivities which have structural properties. Structure derives above all from regularized practices and is hence closely tied to institutionalization; structure gives form to totalizing influences in social life" (p. 7). Giddens (1976/1993) stresses the dual nature of social structures that condition social action but at the same time are produced by those very actions. Social structure and human agency are inseparable, though distinct, rather than separate and static entities, as implied by traditional social theories described as either structuralism (e.g., Levi-Strauss, 1968; Merton, 1968) or functionalism (e.g., Parsons, 1937). This concept of social structure and social systems provides an important understanding not often given in the analysis of scholarship.

The well-known dictum of Marx that individuals make their own history but not under circumstances of their own choosing provides some insight into the notion of unacknowledged conditions. All individuals are born into roles and resources, for better or worse, without having "earned" them, and often without ever being fully aware of them. Feminists and other members of subordinated groups are often keenly cognizant of the resources afforded "free" to the dominant groups, most notably, white males (e.g., Gore, 1993; Lather, 1991; Mies, 1986; West, 1993b), but which they themselves must "earn." It is much more difficult for members of the privileged groups to recognize and acknowledge these same conditions.

Because human actions reproduce or transform social systems, no social system is "natural" in the sense of being predetermined (or all are natural, if you prefer). In spite of the fact that hierarchical systems have been in existence for a much shorter time than heterarchical systems and that both exist today (Power, 1991), the widespread assumption is that a hierarchical social order is the natural order (see Schwartz, 1986; Smith, 1992 for a critique). One way the assumption is sustained is by a belief in meritocracy — that people are hierarchically ordered because they earned those positions by being more worthy (see Chorover, 1979 for a thorough historical discussion). The pervasiveness of this meritocratic assumption is seen by considering how faculty interact differently with deans and presidents than they do with students and staff and without really being cognizant of it.

The ruling elite have always attempted to justify their position by claiming that domination is human nature. Chorover (1979) traces some

of this history back to Plato's myth of meritocracy and describes several ways in which this belief is manifested. Schwartz (1986) discusses this same issue from a slightly different angle but draws the same conclusions. In an immanent critique he details arguments for and against Adam Smith's economic man, social Darwinism, and behaviorism. What is important in these analyses is how each of these several traditional theories and beliefs lead to the acceptance of hierarchical structures as natural or necessary. Giddens (1984) argues that widely held social theories or beliefs become self-fulfilling prophecies. Thus, the emergence of hierarchical structures involves both the imposition of domination by some groups *and* the acceptance of it by others. These two sets of actions are both intended and unintended.

Another widely accepted belief supporting the notion of hierarchical structures as natural is that people do not interact harmoniously "naturally," but that such behavior must be imposed upon them by "society." This follows most notably the view of Thomas Hobbes, who suggested that people would rather be peaceful and industrious than aggressive and lazy, but that by nature they were unable to do so by themselves and thus should be willing to place themselves "in awe" of a higher authority for the purpose of enforcing morally and socially responsible actions. This perceived need to control people is achieved, for one, by rewards and/or punishments.

Few people would deny that for a society to be peaceful each person must interact in a harmonious way with a large number and variety of people. But this assumption of "society" as a necessary imposing force to regulate individual behavior is often made without acknowledging that society is made up of people (Crandall, 1981). Cooperative collective behavior is just as possible or "natural" as competitive individualistic behavior (e.g., Combs, 1992). We shall return to this discussion but first consider the next element in our global model.

Goals, Purposes, and Intentions

Essential to the analysis of any living system are its purpose, goals, and intentions (e.g., Locke & Latham, 1990; Weir, 1984). Social systems and institutions are not goal directed as such, but they do serve purposes and thus have "effective goals" resulting in functional outcomes. An effective goal is one that people collectively accomplish as a result of their activity. Thus, similar principles apply to both biological and social systems with respect to goals but not with respect to motives and desires (cf. Ermann & Lundman, 1996b). Individual people who make up social institutions each have personal goals, and "collective goals" emerge as informal or formal (written) goals. A formal goal when written is not the

same as an effective goal or functional outcome. Therefore, it is necessary to analyze and compare the formal goals with the functional outcomes of the university as a social system.

It is appropriate then to consider the collective purpose of a social system as well as the purposes of the individuals who reproduce that system (Ermann & Lundman, 1996a). By collective purpose we mean the functional outcome of the system and not just the summation of all the individual purposes. Goals are constrained by the context, that is, they relate to it mutually and reciprocally. Clearly peoples' goals are conditioned by the context within which they operate. No one had the conscious goal of becoming an expert computer programmer until the emergence of computers.

Likewise the goals of a university are constrained by the socioeconomic context in which it is embedded. At the same time the actions of people alter both their physical and social environments or context. Goals are also multiple, they arise from multiple conscious and unconscious intentions or motives that may abruptly change (Burton & Davis, 1996). We distinguish goals from purposes and motives that have conscious intentions. Humans are goal-directed with recognizable outcomes to their actions. However, goals are never "final" in the sense of persons being able to stop setting or working toward further goals. Moreover, much of daily living is routinized behavior and as such not wholly motivated (Epstein, 1994; Giddens, 1984).

Goal directedness applies to human behavior in the Aristotelian sense of teleology and is understood in terms of mechanical causality and final causality. However, most especially for the social systems being considered here, goals are necessarily open-ended, because change is a constant feature of open systems. For example, in our model people should perceive goals as providing direction but not destination. These points are important to developing strategies for making meaningful change in the university.

System Attributes or Effectivities

Human animals act — they move, know, perceive, feel, and think, and all of these actions are both connected and distinct as we defined those terms earlier. In this section we are concerned primarily with human attributes. It is not necessary to consider all attributes, only those most fundamental to the human condition and basic to human nature as we intend it here. Human nature does not imply that attributes might not change under changes in context. What we hold to be human nature depends upon the physical environment and upon the social systems and institutions that people reproduce or transform. Because these systems

and institutions can be transformed or altered by human actions, what people are — what human nature is — will depend upon what people make of themselves and their social systems and institutions (Schwartz, 1986, p. 248; see also Dawes, 1995).

Rejecting dualism we accept that humans are both individual and social (e.g., Bakan, 1966; Faber, Manstetten, & Proops 1995; Guisinger & Blatt, 1994). Human existence is indispensable of both self (an individual) and not-self or something other than self (Das, 1900), which we take generally to be other people and for purpose of discussion here, a community.

Humans as individuals are necessarily selfish because of the need for survival (self-maintenance), development, and self-acceptance/realization. As social beings, humans are necessarily communal and altruistic (Fiske, 1990), because their very existence and initial survival depend upon others and thus their need to please others. Humans also exhibit species replication, renewal, and service (Faber, Manstetten, & Proops, 1995) and require acceptance by others and a sense of belonging. There can be extreme asymmetry or imbalance between conditions of selfishness and altruism, but not likely ever a complete absence of either, at least without extreme changes in context.

Humans have perceptual systems and thus seek information and change. Living systems grow and increase in complexity and they seek advancement or progress. Humans also have affective systems and so connect with both their physical and social environments in terms of what these environments afford for good or ill (Das, 1900; Gibson, 1979). In fact, affective systems provide simultaneous appraisal of the environment and the self, underscoring the notion that humans are inseparably both individual and social (Hobson, 1993).

The attributes described above are fundamental and differentiate into a complex of human attributes and personalities. For example, the need for advancement and acceptance of others may lead to a drive for excellence or greed or some combination of the two. We note, as a reminder of our position, that all behavior patterns and functional outcomes result from the necessary mutual and reciprocal relationship between goals, context, and attributes.

From the above we understand that all human actions and attributes have both a positive and negative valence which may together or separately be realized. We agree with Schweickart (1992), that virtues, when carried to an extreme under certain contexts, can become vices, and conversely, vices can become virtues.

Humans are both egoistic and altruistic. The attributes and actions that emerge are dependent upon the social structures, systems, and institu-

tions which preexist people and which they reproduce or transform. Attributes and actions are also mutually dependent upon the goals toward which people consciously and unconsciously strive. Thus, the concept of duality of structure suggests that humans are not merely the product of social systems, but that they also have agency (Giddens, 1984). In systems theory language, humans, as complex open systems, have on-board energy and thus can go against the external energy gradients (Kugler & Turvey, 1987). Stated differently, humans have choices. Human behavior is guided but not determined by social or physical laws (Bhaskar, 1978; Warren, 1988). Laws are context conditioned, they change, and as Bhaskar notes, they may be unrecognized and unexercised.

Agency/choice and power. Though context has a very powerful influence on human behavior, humans have agency, they can and do make choices. Choice as decision making is a central theme in this article. Choice entails too many concepts to be discussed fully here, but in short it can be viewed simply as the opportunity to make an uncoerced selection from two or more alternatives. The question is how many alternatives do people have and what is the nature of these alternatives? How many decisions do individuals make and how many are made for them? How many decisions are taken away and how many relinquished? Our contention is that today, too few people make most of the decisions and, in particular, the most important ones. This is so in spite of the fact that it is the nature of all humans to be decision makers because of a tendency toward self-actualization: a feeling of control over oneself and one's immediate social and physical environment (deCharms, 1968, p. 269). To make choices and carry out actions, people must have power.

Power is understood as the "utilization of resources" (Giddens, 1984). Giddens (1976/93) further describes power in the sense of the transformative capacity of human agency, which means the actor can intervene in events so as to alter their course. In the narrower, relational sense, power "is a property of interaction, and may be defined as the capability to secure outcomes where the realization of these outcomes depends upon the agency of *others*. It is in this sense that some have power 'over' others: this is power as *domination*" (pp. 117–118). However, power is never zero-sum. Persons in subordinate positions always have some power, even though it is often unrecognized, unacknowledged, and unexercised.

Power in the narrower sense is generated in and through the reproduction of structures of domination. The resources that constitute structures of domination are of two sorts — allocative (material) and authoritative (non-material) (Giddens, 1984). Human actions entail a combination of these two types of resources. All human interactions are power relations,

so a conceptualization of power is necessary. However, we do not go into detail here (see Giddens, 1984, 1985), but we do connect power to decision making.

An important aspect of power and decision making is the recognition that with choices come freedom and responsibility. In fact, we define freedom as maximizing the degrees of freedom, that is, the number of choices of all individuals who constitute the system, which in turn maximizes the degrees of freedom of the system as a whole or the collective. This definition recognizes both the individual and collective aspects of freedom. We add to this Greene's (1988) notion of freedom as "the capacity to surpass the given and look at things as if they could be otherwise" (p. 3). The realization of a decision, that is, actualizing a choice, leads necessarily to consequences that can be both intended and unintended. This implies a responsibility for one's actions (whether exercised or not). Responsibility means a conscious attempt to understand and account for the consequences of one's actions. We suggest that responsibility should be directly proportional to the resources available to the person at the time and under the circumstance that the decision is made. Often, when one relinquishes one's freedom to make decisions, one also gives up responsibility. The reverse may also be true. Acknowledging one's responsibility to others directly or indirectly is accountability.

In a hierarchy, subordinates relinquish both their freedom and their responsibility (e.g., Ermann & Lundman, 1996b; Gordon, 1990; Harry, 1989; Milgram, 1974; Spence, 1993). At universities, required courses relieve students of their rights *and* the responsibility of choosing the courses that might best suit their needs and interests. Maximizing individual choices, then, means also maximizing individual responsibility (whether one actually accepts this responsibility or not). From this understanding it is seen that intellectuals, mostly harbored in universities and private think tanks, occupy the second rung of the hierarchy partly because they are "bought off," though not in any simple way (see Simpson, 1994).

Responsibility and accountability are quite different in heterarchical as opposed to hierarchical systems. In a hierarchy, people are accountable to those above them through the laws enforced by power, customs, and beliefs. To the extent that people at the top of the hierarchy make or influence the laws and beliefs, they have little or no *formal* accountability (Domhoff, 1990; Weiner, 1990). In contrast, accountability in a heterarchical system is to those persons whom your actions affect. One is accountable to self and to one's immediate social group at least, and also possibly to much larger groups, depending upon the action. Accountability in a heterarchy is less imposed by law and authority or power and

is instead achieved by social interaction and freedom of decision making. People are more obligated to act morally and responsibly toward those to whom they feel closer. For example, all else being equal, a person is most accountable toward a relative, a friend, a student or co-worker, an acquaintance, a stranger, and an enemy, respectively. This underscores the importance of promoting closely woven communities as necessary for maintaining heterarchical systems.

Organization of Complex Systems: Context

Given the above understanding of social context, we now consider in more detail social systems by contrasting two general models: hierarchies and heterarchies (e.g., Powers, 1973; Shaw & Turvey, 1981; Turvey, Shaw, & Mace, 1978). These systems do not appear in the world in the pure form in which we describe them in this section. Nevertheless, this theoretical description is useful in understanding the real world.

Hierarchical systems are reproduced by and, in turn, constrain the goals and attributes of the individuals who comprise that system. Hierarchies thus emerge as the result of the activities and goals of the individuals, but as a social system in the sense of Giddens' duality of structures they serve to both enable and limit those very activities.

Formal Hierarchical Systems

A hierarchical system is one in which decision making is in the hands of a few. Most decisions therefore most benefit those very few, who thus, in effect, dominate others. The most important decisions made in any society concern the production and distribution of resources. Thus, the overarching context for human activity is the socioeconomic system, which currently is structured hierarchically to an even greater degree than the university. Here we argue that the two social systems, the university and the larger socioeconomic system, mutually and reciprocally constrain one another. Therefore, fundamental change in one system necessarily entails a change in the other.

The primary features of a formal hierarchical system are listed in Table 1A. In a pure hierarchy, commands are unidirectional. The relationship between two levels is immutable: A, the higher level, always commands B; B never commands A. In less pure systems some commands to higher levels are allowed, and in this case there is a "fixed asymmetry" in the command flow. The second feature of a hierarchy is that of singularity and immutability. For any given node, the role that it plays is singular and immutable. The corollary to this feature is that for every function to be computed (or role to be played) there is a specific

node in which that function is invested. Different nodes do not do different jobs. Given these two features, a principal characteristic of a hierarchy is the centralization of control — the investment of decision making in one executive node (Turvey, Shaw, & Mace, 1978). Hierarchical structures serve to limit the degrees of freedom of that system and to simplify control by the executive. Hierarchical systems in general are known for their stability and resistance to change (Laszlo, 1983). The military is the closest example of a social system approaching a pure hierarchical structure. Generals are at the top of the structure and privates at the lowest level. Commands flow only in one direction. Power increases with each level in the hierarchy. Each military unit has its own function. Capitalism is also clearly hierarchical as are universities to a lesser extent. Power and wealth, in a capitalistic system such as in the United States, are distributed hierarchically, and those who are at the top make the decisions that govern the country. The lower down one is on the hierarchy, the less control one has, not only over politics and policies in general, but also over one's own personal life. In the university, the higher up the hierarchical structure, the more one has decision-making power and the further one is from the actual "work" (discovering and disseminating knowledge). This feature is common in hierarchical social systems.

Formal Heterarchical Systems

Hierarchies have centralization of power, heterarchies on the other hand, have free-dominance (Table 1B). Executive decisions may be made by different persons (nodes) in the system at different times. "Par-

TABLE 1
Formal Characteristics

- | | |
|----|------------------------------------|
| A. | HIERARCHY |
| 1. | Commands are unidirectional |
| 2. | Relationships immutable & linear |
| 3. | Roles are singular & immutable |
| 4. | Centralization of control |
| 5. | Reduces degrees of freedom |
| 6. | Highly stable, change minimized |
| B. | HETERARCHY |
| 1. | Free dominance |
| 2. | Reciprocity in flow of information |
| 3. | Functional pluripotentiality |
| 4. | Leadership is fluid |
| 5. | Decentralization of control |
| 6. | Freeing of degrees of freedom |
-

tioning the systems into agents and instruments is arbitrary in that the extant relations depend on the context, on the task being performed" (Turvey, Shaw, & Mace, 1978). In a heterarchy there is reciprocity in the flow of information. Commands go both ways. There is also functional pluripotentiality, that is, no node within the system is responsible for only a single function, and any node can assume a (limited) variety of roles as situation and task demand. It follows from this redundancy of function that any inventory of basic constituent elements will be equivocal. Relatedly, management in a heterarchy is not the prerogative of any one node. Many nodes would function cooperatively in decision making, although not all nodes need participate in all decisions. Leadership is fluid, flowing from one node to another depending upon the activity. There is decentralization of control. By definition, the degree to which a social system is heterarchically structured is determined by the extent to which the individual members (nodes) of that system share in decision making.

Heterarchical structures serve to maximize the degrees of freedom of that system. As is understood in chaos theory, freeing the degrees of freedom leads to new and emerging properties. In biological systems one principle suggests that becoming skilled in movement tasks means releasing or maximizing the degrees of freedom (Bernstein, 1967; Newell, 1986; Turvey, Shaw, & Mace, 1978). However, at times, depending upon the task and environmental context, it may be necessary to freeze or constrain some degrees of freedom in order to accomplish the goal (Vereijken, van Emmerik, Whiting, & Newell, 1992). A heterarchical system is designed to accomplish both the releasing and the limiting of the degrees of freedom. In contrast, a hierarchical system reduces the degrees of freedom. Within a heterarchical system, hierarchical control can exist temporarily, and thus the former subsumes the latter. Central control can emerge temporarily for any particular task, but it never remains with the same executive, as it does in a hierarchical system.

Because heterarchical systems maximize degrees of freedom, these systems can lead to diversity and change. The overall heterarchical nature of the living world has resulted in great diversity. As humans continue to exercise increasing dominance over this world and thus restructure it more hierarchically, diversity will decline instead of grow, a fact we are witnessing today.

Goals and Purposes in Complex Systems

The second element of the global model to describe in more detail is goals, which are multiple and not always explicit. Here we consider the

most salient goals of the larger socioeconomic system of capitalism and contrast them with those found in a participatory democracy. We also examine the goals of a university system as a presently structured hierarchy and compare them to a university system as we envision it structured heterarchically. As we have emphasized throughout, the elements of the model, in this case goals and context, mutually and reciprocally relate.

Goals in a Capitalist Society

Overall, the most important decisions in society concern the production and distribution of resources and control over the means and use of violence. Capitalism is the overarching social institution whose hegemonic characteristics are well documented not only in Marx's analysis (perhaps the most thorough), but also in many more recent extensions of that work (e.g., Brenner & Brenner-Golomb, 1996; Denitch, 1992; Giddens, 1985; Legters, Burke, & DiQuattro, 1994; Macpherson, 1985; Shapiro, 1990). The goals of capitalism are performativity (profits) — the accumulation of material wealth — and power or domination (McLaren, 1995), to which all other goals, when conflicting, become subordinate. Capitalism requires an ever increasing consumption (growth) and can easily lead to the destruction of the physical environment. Because of its hegemonic nature, capitalism penetrates into every aspect of life, what Schwartz (1986) calls economic imperialism, and often with devastating effects. Capitalism is hierarchically structured and characterized by a high degree of inequity and an extreme disproportioned distribution of wealth and power (see Sklar, 1995 for recent data). As a result, masses of people are forced to succumb to the economic system in order to survive. An asymmetric distribution of resources guarantees high levels of competition, greed, and violence (Nagel, 1995; J. W. Smith, 1994). These three outcomes are important explicit goals of capitalism.

Indeed, "competitiveness" is the current buzz word as the necessary goal of U.S. industry, business, and even education. Competition is the primary goal, though often a misunderstood concept, in capitalism. Competition is a zero-sum activity, even though it is often assumed that competition brings with it growth and efficiency. But such growth inevitably favors the "haves" and rarely the "have-nots," because the "haves" make the rules. It is the capitalists, the boards of regents, and the administrators (hierarchs) who decide on how the resources are allocated rather than the workers or the various student, faculty, and staff groups. In general all people are necessarily influenced by self-interest even when intending not to be. But it is the hierarchs who make most of

the decisions, and therefore it is their interests that are served most. This more than anything else accounts for the salary discrepancies between administrators and faculty (CEOs and workers).

Goals of Participatory Democracy.

Although advances in technology and industry for the production of material wealth are not discounted in participatory democracy, they are not achieved at the expense of the most important goals: freedom, harmony, and peace. Collective freedom requires maximizing the freedom of each individual. All other goals must be consistent with this goal and subordinate to it. The maximizing of participation of all individuals in social life, then, is an effective goal in participatory democracy.

Harmony is defined as synchronization among individuals and social groups, who work to reduce tensions, and it is understood scientifically and with clear practical implications (e.g., Bernieri, Reznick, & Rosenthal, 1988; Condon, 1982; Newton & Engquist, 1976; Newton, Hairfield, Bloomingdale, & Cutino, 1987). Thus, freedom is best achieved by emphasizing cooperation and reducing competition. However, harmony among individuals and groups, in our view, will not and should not be constantly maintained. Self-interests will always from time to time conflict, leading to a reduction in or temporary lack of harmony. Though conflicts can lead to further conflicts, they can also lead to improved relations and other advancements, as long as the goal of harmony prevails. Thus, the goal of harmony serves as a guide for resolving conflicts. Goals are directions, but not destinations.

Peace as the minimization but not the complete absence of some conflict and destruction follows from the concept of strong interdependency of all living things (e.g., T. S. Smith, 1992). There must be balance for all life forms to exist and for new ones to emerge. But this is not to be understood as homeostasis or equilibrium, but as a fluctuation (Prigogine, 1976). However, if an asymmetry of distribution of resources is extreme, the destruction rather than emergence of species occurs. Peace, then, involves the minimization of destructive forces and the solving of social conflicts through rational and moral reasoning rather than violent means. Minimizing destructive forces is a continuous process and not a final end-state.

A hoped-for outcome of these goals is social progress. Progress or the improvement of the human condition is believed to emerge as a result of an overall maximization of the degrees of freedom. But the improvement of the human species must be tied to the improvement of other species and the context as a whole. Given the numerous current crises around the world — extreme violence, poverty, homelessness, and de-

struction of the social and physical environments — an important current goal is emancipation or liberation. Liberation is a gradual open-ended progress from unwanted and oppressive determinations to wanted and enabling ones (Bhaskar, 1989, p. 6). If our model is reasonably accurate, it would be possible to eliminate the extremes of violence, poverty, and environmental destruction but never eliminate the conflicts that would tend toward these conditions.

*Goals of a Hierarchically Structured (Capitalistic)
University*

From its inception formal Western education has mostly served to maintain the hierarchical social order, both locally (Gatto, 1993; Jensen, 1984) and globally (Mazrui, 1984; Spivey, 1986). If change has been adopted, it has largely been in order to conserve and maintain the interests of the few — those who hold the wealth and power. In the early 1900s universities came under the control of the “captains of industry” (such as Leland Stanford), who ran them as something of a personal fiefdom (Douglas, 1992, p. 24). Rhodes (1990) suggested that universities in the United States evolved from this Harvard model of elitism to a “land-grant” institution, thought to be more egalitarian in the sense of being open to more students. Universities have now evolved to the present-day research model, though several forms exist. In the first instance, “knowledge was a deposit to be safeguarded, to be conserved, and to be handed on” (Rhodes, 1990, p. 6). Under the Morrill Act education was established to “stress practical education as well as classical learning” (p. 7). Knowledge was viewed as an instrument instead of an end in itself (Thomas, 1993). The research model is an elitism of competition between universities and among researchers and between other faculty and researchers. This model has given us rigid walls, upward ladders, a confusing array of offerings to students, a forbidding and meaningless collection of beehive segments, a Mandarin snobbery based on specialization, and an unhealthy desire to hoard one’s subject matter, one’s private preserves and achievements (Douglas, 1992). “Knowledge in the research university has become a personal possession, a personal job” (Rhodes, 1990, p. 8).

The goal of universities is learning in its various forms and purposes, but it is very much limited as well as enabled by the economic context in which the university is embedded. Because monetary resources are required to operate a university, securing these resources is a necessary goal. When resources are scarce, they become more important than scholarship. Today, universities are run like businesses, driven by “the bottom line,” and knowledge is a commodity for both the university and

for the individual scholar (Soley, 1995). The research dollars for which universities compete are increasingly held in the hands of a few. When universities compete for grant monies and faculty are rewarded on this basis, the free pursuit of knowledge is readily lost. Shifting the reward emphasis from research to teaching, as Boyer advocates, will not produce the desired effects. Promotion and the PhD degree rather than dispassionate teaching and learning are the driving forces behind graduate programs (Rhodes, 1990).

Further, underlying the goals of learning and of maintaining financial solvency is the goal of maintaining the social order. From its inception, formal Western education has served to maintain the hierarchy (Gatto, 1993; Jensen, 1984; Spivey, 1986). There is much debate on whether universities should serve as agents of change or as agents of maintaining order. Change does occur but not with respect to the social order, which is maintained in many ways. But we hold that formal education is central to changing this order. The organizational style we advocate is heterarchical or democratic, as described below. Understanding contextual constraints is essential in our approach to reconsidering scholarship. Unfortunately, these broader structural, contextual, and historical concerns are given short shrift by Boyer and others (Diamond & Adams, 1993).

One of the stated goals of mandatory public education was to assimilate all people coming into the United States into one mainstream culture. This has some positive effects but also some destructive ones. In particular, the attempt to assimilate Native Americans (Jensen, 1984) and people of African descent has been destructive (Spivey, 1986). The ultimate conquest and domination of any people beyond complete annihilation is to destroy their culture, one effective goal of colonialism. Not only is one language dominant, there is a standardization of both the instructional and evaluative aspects of education. Formalized assessment, even when intended as quality control, serves more to maintain the structures of domination. For an illuminating discussion, see Chorover's (1979) chapter 3 on IQ as mental measurement for social control and Gould's (1981) *The Mismeasure of Man*.

An often stated goal of universities is to produce leaders. When the emphasis of the preparation is only on the individual and not also on the collective, it serves only to prepare persons to fill in the higher rungs of, and thus reproduce, the hierarchical social system. Although it is often assumed that universities, through the multiplicity of rules, required courses, emphasis upon grades, codes of speech, and so on, are developing students to think for themselves, they largely fail in this goal. Under the traditional style of leadership, change is imposed in top-down fashion. Below, we advocate a different conceptualization of leadership.

In Western positivistic science the often stated goal is to describe, explain, and predict. But prediction implies control for those with access to the information. Further, with the assumed separation of facts from value in positivism, science leads to and is influenced by a hierarchical capitalistic system (Schwartz, 1990).

*Goals of a Heterarchically Structured (Democratic)
University*

The most important goal for the university, and the one to which all others should be subordinated, is the free pursuit of the discovery and dissemination of knowledge. But discovery is not for a personal accumulation of knowledge as in owning, but for a sharing of knowledge. Rather than producing traditional style leaders, the goal of a university in our model is to develop critical thinkers. This development should begin at home and continue in the elementary schools, but it often does not (Gatto, 1993). In our view, leadership entails critical reflection (e.g., Henderson & Hawthorne, 1995). Thus, change is not imposed from above but emerges from "reflective practitioners."

The development of affect is an important goal of our heterarchical model of education, but since World War II it has been increasingly eliminated in hierarchically structured schools and universities (Beane, 1990). Affect is associated with values that we advocate over laws and policies as guides for action. When values are put back into science, the goals of science are to describe, explain, and to share information for the purposes of better decision making for all. With the current predominance of fragmentation, values or ethics are often taught without real connection to the rest of the world or to daily activity. We argue that facts and values are not separate.

Behavioral Patterns and Functional Outcomes in Society

Introduction

What are the patterns of behavior and functional outcomes most likely to emerge, given the mutual constraints of the goals of capitalism, the context of hierarchical structures, and the nature of human actions (Figure 2A)? In contrast, what patterns of behavior and functional outcomes are most likely to result from the goals of social democracy, the context of heterarchical structures, and the nature of human actions mutually constrained (Figure 2B)? Put another way: What functional outcomes and behavioral patterns and what goals will more likely sustain a hierarchical system? A heterarchical one? In pursuit of answers, we have identified 13 contrasting pairs (Table 2) on the basis of our theoretical argu-

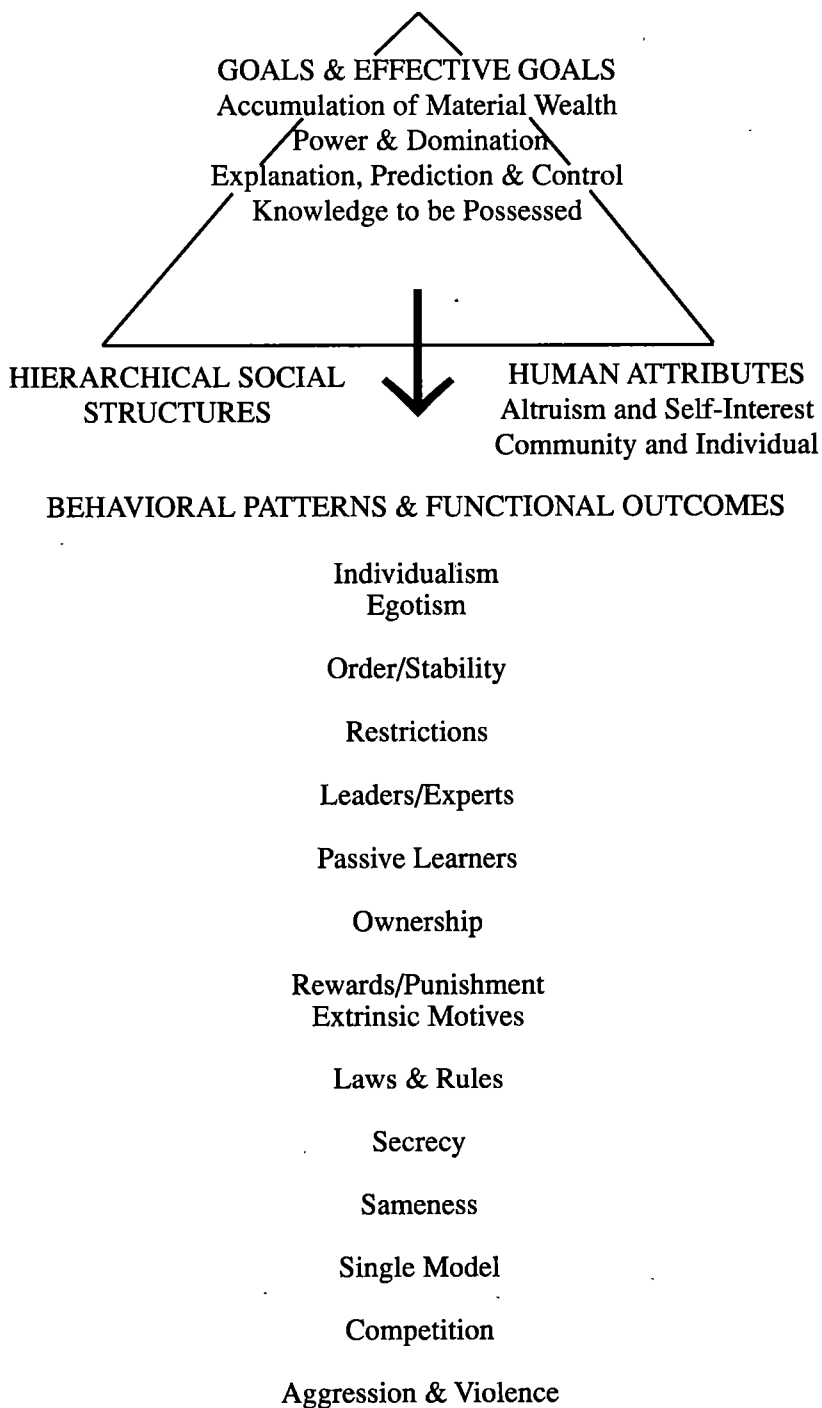
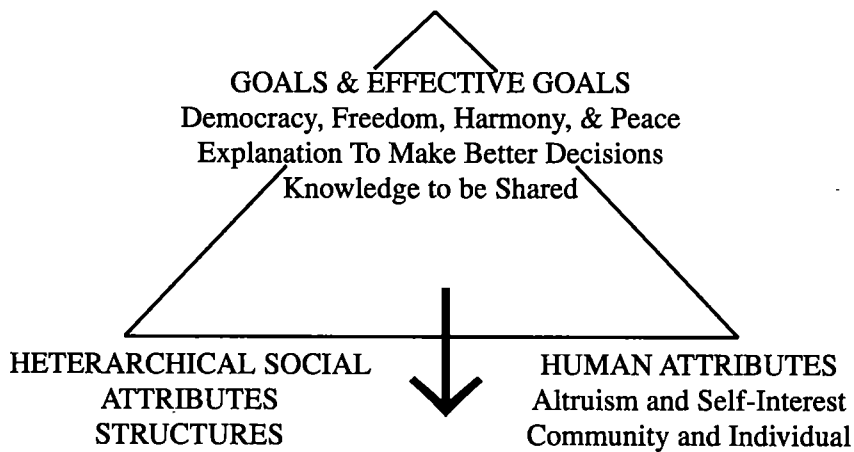


FIG. 2A. Behavioral Patterns and Functional Outcomes Resulting from and in Hierarchical Structures and Associated Goal Conditions.



BEHAVIORAL PATTERNS & FUNCTIONAL OUTCOMES

Communitarianism
Altruism

Conflict/Change

Choices

Critical Thinkers

Active Learners

Stewardship

Acknowledgement/Accountability
Intrinsic Motives

Values & Self-Accounting

Openness

Diversity

Multiple Models

Cooperation

Harmony & Peace

FIG. 2B. Behavioral Patterns and Functional Outcomes Resulting from and in Heterarchical Structures and Associated Goal Conditions.

ments above and a review of the theoretical and empirical literature in various disciplines. We have not attempted to be exhaustive, but have identified what we believe to be important contrasts.

In answering the above questions, two sets of contrasts were derived (Table 2): (a) behavioral patterns and outcomes supporting hierarchical structures that must be minimized or even eliminated in favor of patterns and outcomes supporting heterarchies, and (b) both patterns or outcomes are desirable, even though one side in its extreme supports (and results from) hierarchical structures, whereas the other side in its extreme supports (and results from) heterarchies.

Our discussion begins with (b) because it is more complicated in that the pairs need not be viewed as being mutually exclusive or opposing, but both may be achieved or transcended to a higher-order beneficial pattern or outcome. This understanding does not contradict our support for heterarchies over hierarchies, because more temporary hierarchies are allowed within an overarching heterarchy, which is the socioeconomic structure. Thus, in our model, there is a place for experts, excellence, and competition in social groups, balanced by a respect for opposing opinions, a diversity in skills, a toleration of differences, a sense of humility, and the practice of cooperation.

Further, the contrasting pairs differ under different contexts and under different goal conditions. For example, given our conceptualization of human nature as both individual and social, individualism and commu-

TABLE 2
Behavioral Patterns and Functional Outcomes

HIERARCHY	HETERARCHY
<i>Transcend</i>	<i>Transcend</i>
Individualism	Communitarianism
Egotism	Altruism
Order/stability	Conflict/change
Restrictions	Choices
Leaders/experts	Critical thinkers
<i>Minimize</i>	<i>Maximize</i>
Passive learners	Active learners
Ownership	Stewardship
Rewards/punishment	Acknowledgement/accountability
Extrinsic motives	Intrinsic motives
Laws & Rules	Values & Self-accounting
Secrecy	Openness
Sameness	Diversity
Single model	Multiple models
Competition	Cooperation
Aggression & violence	Harmony & peace

nitarianism need not be opposing or binary. Individual needs and interests need not always conflict with those of the community, but when they do, they can be transcended. Individualism and communitarianism are binary and dichotomous mainly under hierarchical social structures and under goal conditions of greed and domination, but not under heterarchical structures with the goal of freedom as we defined it. We wish to dispel a belief in the either/or nature of these outcomes, which can lead to unnecessary conflict. On the other hand, we would attempt to minimize or even eliminate passive learning, ownership, extrinsic motives, laws, secrecy, sameness, single models, and aggression. Greater balance is needed between restrictions and choices, between order/stability and conflict/change, between leaders and critical thinkers, and between competition and cooperation, and we need to understand their differences within different contexts and with different goal conditions.

The comparison, then, is between the behavioral patterns and functional outcomes in both the socioeconomic system and the university when structured hierarchically and when structured heterarchically. However, we do not make the comparisons in great detail here. Rather, we lay out the reasons for and implications of such an analysis and point the reader to the references where more focused discussions are found. One aim of this section is to demonstrate the close mutual and reciprocal relationship between the university and the socioeconomic system. Importantly, with respect to this relationship we will emphasize the dominance of the socioeconomic system (Simpson, 1994).

On the basis of the above concepts we support our major contention that all dominant-subordinate relationships are to be challenged. Perhaps all, or at least nearly all, destructive social relationships can be traced to an asymmetry of power. However, we are quick to point out that not all dominant relationships need to be destructive. As Freire (1985) argued, domination takes many forms. One *should* seek power, but one also must constantly challenge and assess relationships in regard to domination-subordination (Power, 1991). For example, parent-infant relationships and teacher-student relationships do not necessarily require an unequal exercise of power, as is commonly assumed (e.g., Trevarthen (1979, 1980).

Contrasting Pairs to Be Transcended

Most important for our model is to reject the belief that people are naturally *egotistic but not altruistic*. This belief has a long and complex history (e.g., Combs, 1992; Guisinger & Blatt, 1994; Oliner, et al. 1994). One way that it is perpetuated is by using altruism as a term only to indicate an extreme condition, as in the heroic act of saving another

person from drowning in a raging flood. But everyday random acts of kindness are not referred to as altruistic, reinforcing the belief that ordinary people are basically selfish. One accepts that Mother Theresa is an exception and not an achievable role model. In contrast, our major premise is that people are both egoistic and altruistic and that these antinomies can be transcended to result in a higher-order mutually beneficial outcome. Egotism and altruism differ under different contexts and under different goal conditions (Kohn, 1992).

The same argument can be made for the closely related concepts of *individualism and communitarianism*. Individualism in its extreme has helped to reproduce hierarchical systems that recursively foster extreme individualism. For example, greed is not simply the accumulation of wealth, it is the *excess* accumulation for a few at the exclusion of the many. Thus, excess is a relative (intrinsic) measure and not an absolute one. Selfishness is not merely self-interest, it is self-interest in the extreme and to the exclusion of community. But under heterarchical social structures and goal conditions stressing peace, harmony, and the discovery and dissemination of knowledge, individual and community need not be dichotomous.

Hierarchical social structures, with the emphasis upon competition and greed, foster individualism to the exclusion of social interest (Guisinger & Blatt, 1994; Hsu, 1983). But in a heterarchical and cooperative context, humans as individuals strive toward self-interest and, at the same time, as social beings strive toward sharing and giving to others. Both these tendencies can be achieved, and such balance is necessary in order to sustain a heterarchical system. In our model an individual should not become overly selfish nor give up all individuality and freedom for the collective. Necessarily, there will always be a tension between these two extremes, which must be resolved or transcended.

Because individual interests differ and come into conflict, a harmoniously functioning society requires a fairly large percentage of individuals who are willing to identify with and be concerned about a broad range of other people. People must think globally and act locally. The adaptive value of such characteristics as cooperation and altruism has received attention recently by scientists concerned with the evolution of the human species (Combs, 1992; Trevarthen, 1979). The idea that concern for others is just as important to the adjustment and well-being of the individual as it is to the social group in general has been voiced only occasionally. In Western societies, most approaches to mental health have stressed the necessity of satisfying essentially self-centered needs, such as the basic biological requirements for survival, sexual gratification, self-esteem, and avoidance of excessive fear, guilt, and conflict. In

the social realm, emphasis is usually on the need to receive love, affection, and respect. The need to give love is seldom emphasized (Crandall, 1981). In contrast, Alfred Adler developed an approach to mental health that was not so egocentric but stressed the importance of "social interest" as a major source of strength for the individual.

Thayer (1994) argued that individualism, freedom, and human rights, as conceived in Western science, do not deliver the positive effects claimed. Instead they are disguises for top-down authority rather than substitutes for it. In a hierarchy, B must accept A's decisions because A has the authority to make the decision. In contrast, if A must secure B's wholly voluntary agreement, as in a heterarchical system, the decision becomes collective (communal) or joint and is no longer an individual decision (see Thayer, 1994, for details of this line of reasoning).

Community does not just mean concern for other people, it also means concern for the physical environment (e.g., Caplin & Harrison, 1993). The world-view of pre-European Africa and pre-European America was that persons are one with the earth (e.g., Crosby, Davis, & Graves, 1992; Dyk, 1938; Ingold, Riches, & Woodburn, 1988; Maruyama, 1967). This relationship is a mutual and reciprocal one. Material greed and inequality are not only detrimental to people, they help destroy the physical environment (Boyce, 1994), which recursively has a negative impact upon the quality of life. But there will always be social-physical as well as intersocial tensions, because stability and change are continuous.

What follows from the belief that people are inherently hedonistic, selfish, and lazy is the acceptance that, in general, people must be controlled. People must be in awe of either a God, the power of a nation-state, laws, rules and policies, or any combination of these. One of the mechanisms used to keep people in line under each of these types of dominator models is a system of rewards and punishments (or fear of punishment). Further it is assumed that the intellectuals — and by extension or in light of this, science — should sit at the top of the hierarchy. Thus, tacitly or explicitly people accept hierarchical structures as natural and/or necessary.

In heterarchical systems *conflicts and change* occur with greater frequency than in hierarchical ones. Neither are viewed as being necessarily detrimental to the goals of the university; indeed, conflict can lead to greater discovery or better decisions. That is, conflict under conditions of cooperation and the goals of freedom of discovery will be positive; under conditions of competition and the goal of domination conflict will be negative. Likewise, change can and often does have both negative and positive outcomes, or either one. *Order and stability* are greater under hierarchical social structures and more difficult to obtain under heterar-

chies. We suggest that order and stability as well as conflict and change are needed in social systems.

We have emphasized as our most important aim the maximization of *choices* for all individuals of each collective. However, choices will always be limited or *restricted* by each of the three elements of our model — context, goals, and attributes. Also with choice comes responsibility, and this should be the major restriction on choice. Because universities must meet a wide range of needs for and from a variety of people in multiple roles, there will be many conflicts of interest. Restrictions on individual choices are thus necessary, if all are to have an opportunity to reach their goals.

Current emphasis at universities is to develop *leaders* so they become the *experts* in society and to prepare a few elite managers to be the “specialists” who make decisions for everyone else. At the same time, public schools emphasize *what* to think rather than *how* to think (Myers, 1993). Public school students learn that obeying rules and respecting authority are more important than learning and that, as Gatto (1993) notes, “good people wait for an expert to tell them what to do. It is hardly an exaggeration to say that our entire economy depends upon this lesson being learned” (p. 9). Our public education system produces a good supply of helpless people each year. The most successful students find the roles of leadership in society, and the rest fill in the lower rungs. Thus, university and lower school education combine as sorting offices to pigeon-hole people into each level of the hierarchy.

In contrast, the function of the university *and* lower schools in our model is to produce critical thinkers. This model does not eliminate experts or leaders but requires a reconceptualization of these concepts; leaders and experts do not tell others what to do, but they provide needed information and strategies for others to make better decisions. However, our model does eliminate *passive learners*, who feed the system of subordinates, and replaces them with *active learners*, who must be critical thinkers.

Contrasting Pairs to Minimize or Eliminate

In addition to passive versus active learners, we briefly examine other contrasting pairs where the patterns and outcomes under hierarchies predominate today and must be minimized or eliminated in favor of the contrasts under heterarchies. First and foremost, to maintain a hierarchical system requires the control of the production and distribution of resources and the control of the means of violence.

Ownership is taken for granted in capitalistic societies and is central to the accumulation of wealth and domination. All ownership of land or

material means of production was at one time or another obtained by force. One prominent means of maintaining ownership and control is through generational inheritance, a concept that is accepted without question, whereas reparation for certain groups, which can be argued for with the same logic, is not.

In order to transform the socioeconomic system to a more heterarchical system, we replace ownership with *stewardship*. In the hierarchical university system, knowledge is to be possessed; in the heterarchical system it is to be shared. In a capitalistic system, ownership of resources and the accumulation of material wealth become extrinsic motivating factors and can be used by managers to control workers. The assumption is that faculty will not produce unless they are rewarded or threatened with punishment. This belief is accepted by faculty and administrators alike. Thus, *rewards and punishment* are firmly entrenched practices in universities and industry in spite of the research spanning more than thirty years, which shows that extrinsic rewards are inferior motivators and, under certain conditions, can subvert intrinsic motivation (e.g., Deci & Ryan, 1985; Kohn, 1993).

With respect to agency and accountability as they relate to the function of a university, we advocate *intrinsic motivation* (Condry, 1987; Kohn, 1992), believing that self-organizing systems are inherently prone to learn about their world. White (1959; see also, Deci & Ryan, 1985; Harter, 1978) called this "effectance motivation." There is a desire to interact effectively with one's environment and to exert some personal control over the world, and this begins in infancy (Bertenthal & Campos, 1990). Intrinsically motivated activity may be triggered by novelty, incongruity, or challenge from the environment. A heterarchical system allows more self-control and a constraint toward intrinsic motivation. Faculty would strive toward the discovery and dissemination of knowledge *by choice rather than by control*. Extrinsic motive forces are initiated by the controller, who either offers a reward (e.g., merit, tenure, promotion), or threatens a punishment in order to achieve compliance (see Condry, 1987; Kohn, 1992).

There is considerable research both in the laboratory (Glass & Singer, 1972) and in naturalistic settings (Langer & Saegert, 1977; Schulz & Hanusa, 1979; Wolk & Telleen, 1976), which shows that the degree to which people can control their environment and can make choices is positively related to their health, morale, self-esteem, and level of functioning (see Moos, 1981). This is the case whether these individuals are children, elderly adults (Monty & Perlmutter, 1987), or severely disabled people (Segal, Silverman, & Temkin, 1993; Shevin & Klein, 1984). We believe that under a system of choice and social acknowledgment fac-

ulty and students would be more productive than under the current system of monetary rewards and grades.

The systems of control used by business and universities require extensive surveillance in the form of standards, requirements, evaluations, tests, record keeping, and so on. This surveillance work requires many hours of time, not only from numerous staff and administrators, but also from faculty (workers). All of this time is what J. W. Smith (1994) would call "wasted labor." University time and resources would be better spent on the real work of the university — the discovery and dissemination of knowledge.

In order to maintain a heterarchical system, individuals would need to be governed more by *values and self-accounting than by laws and rules*. Rules and laws written with specificity have little flexibility and lack sensitivity to changes in context. Laws often obscure the underlying values, thus creating more conflicts than they solve. Values are context sensitive and more fundamental to the human condition; however, we stress that values would be effective in minimizing conflicts only in a heterarchically structured society with the goals of freedom, peace, and harmony.

A heterarchical system dependent upon values requires a strong sense of community and social responsibility balanced with a strong sense of independence and freedom. More accurately, independence/community and freedom/social responsibility are to be transcended. Freedom does not mean the absence of all restrictions but rather the acceptance of responsibility. People can live as individuals and as part of a community simultaneously or as part of larger and larger communities. To think globally is to recognize that each individual is part of the whole world (Reed, 1996). Under a system governed by values, people are openly and informally accountable to each other during their interactions. In a heterarchy, interactions occur on a more equitable basis even across different roles and responsibilities, and individuals need not feel subordinate, as they do in a hierarchy.

A decentralized university system means greater freedom, choice, and power but also greater responsibility and more informal accountability. Accountability would serve to empower rather than control the faculty. Faculty would have more choices about their job description and positions, and "advancements" would be based more on self-selection. The relationship among faculty and between faculty and students would be more "horizontal" and less "vertical." Students would also be given more choices, particularly with respect to courses. The mentoring model, as a more nurturing approach, fits well with a heterarchical style of organization. Students would become more equal partners in the dis-

covery and application of knowledge. Gaining of knowledge and skills, rather than a degree, would be the driving force. The university would become truly a community of scholars.

Surveillance is a prominent characteristic of a capitalistic system (Giddens, 1985). Secrecy as part and parcel of surveillance is often problematic and is especially inappropriate at a university, where critical thinking is supposedly fostered. "Every thing secret degenerates. . . . Nothing is safe that does not show how it can bear discussion and publicity" (John Emerich Edward Dalberg, Lord Acton, cited in Weiner, 1990).

Contrary to popular belief, egalitarianism does not mean *sameness* but *diversity*. Diversity is achieved by maximizing the degrees of freedom of the collective. Choice, rather than restriction, results in diversity as a necessary outcome. Context variability and diversity are features of a heterarchical system but not of a hierarchical one. In a hierarchical system *one dominant model* exists. Thus diversity is vertical in that only a few people will ever achieve the dominant model. In a heterarchy *multiple models* exist because domination is not a feature.

Capitalism strongly influences the received view of the inherent goodness of *competition*. But competition preceded capitalism, and several factors, such as the scarcity or perceived scarcity of needed resources, have led to the current emphasis upon competition. Further, in today's advanced capitalism and managerial oligarchies, multinational corporations use cooperation more than competition in controlling the market. This globalization has resulted in a new "feudalized" market structure, which has a ripple effect throughout the economy (Brenner & Brenner-Golomb, 1996).

Other major contributions to the prominence of competition have been mechanistic Western science and social Darwinism (Combs, 1992; Schwartz, 1986). In the former it is the image of warring matter and in the latter the notion of the survival of the fittest that prop up competition as being virtuous. Particularly today, these understandings are reinforced by the use of the term "competitiveness" as meaning excellence and productivity.

In our model we stress the minimization of competition in favor of *cooperation* and note the extreme emphasis upon competition today and its close ties with capitalism and with violence. The exchange of war and sport metaphors is not coincidental but is conceptually and practically linked (Jansen and Sabo, 1994). We acknowledge the value of competition, but we wish to restrict its current emphasis. We believe that competition is morally and rationally acceptable when it is done for its intrinsic value. Competing in sports when there is nothing at stake as opposed

to competing for the food and shelter necessary for one's existence are clearly two different situations. When there is much at stake, the contrast between competition and cooperation become very clear, as seen in Deutsch's (1949, 1993, 1994) work on conflict resolutions from personal to international. He states that the processes of a given type of social relationship (cooperative or competitive) elicit and are elicited by that type of social relationship. In Deutsch's words,

Thus, cooperation induces and is induced by a perceived similarity in beliefs and attitudes, a readiness to be helpful, openness in communication, trusting and friendly attitudes, sensitivity to common interests and deemphasis of opposed interest, an orientation toward enhancing mutual power rather than power differences and so on. (1994, p. 112)

In contrast, a competitive orientation usually leads to a destructive conflict process, which has the following characteristics: (a) unreliable and impoverished communication between the parties; (b) the view that the solution can only be imposed by one side or the other through superior force, deception, or cleverness; and (c) a tendency toward suspicious, hostile attitudes that increases sensitivity to differences and threats while minimizing awareness of similarities (Deutsch, 1994).

Although the close connection of capitalism to violence is easily shown, it is seldom acknowledged. The allocative resources, which are increasingly disproportionally possessed, were obtained by individuals and groups, at one time or another, by physical force, coercion, or deception. Force is also often used to maintain the disproportioned ownership. Ideology and other means, as noted above, are also used, but as a supplement and not a replacement for violence, as we document below. Giddens (1979) conceptualized ideology "in terms of the capability of dominant groups or classes to make their own sectional interests appear to others as universal ones. Such capability is therefore one type of resource involved in domination" (p. 6). As Marx stated (cited in Giddens, 1979),

The ideas of the ruling class are in every epoch the ruling ideas: i.e., the class which is the ruling *material* force of society, is at the same time its ruling *intellectual* force. The class which has the means of material production at its disposal, has control at the same time over the means of mental production, so that thereby, generally speaking, the ideas of those who lack the means of mental production are subject to it. (p. 167)

Giddens (1984) rejected Marx's view of class conflict as the method of social change and suggested that power should not be seen as omnipresent, signaling the existence of conflict and the potentiality of oppression. As West (1993a) advised, one should not "demonize" the

enemy but work together to build a better world. The aim of liberation is not to organize the state in such a way as to minimize the scope of power, taming it through parcelling power out in a democratic fashion. Rather, as Giddens (1984) suggests,

Power is the capacity to achieve outcomes; whether or not these are connected to purely sectional interests is not germane to its definition . . . Power is not, as such, an obstacle to freedom or emancipation but is their very medium — although it would be foolish, of course, to ignore its constraining properties. (p. 257)

Power (allocative and authoritative resources), as associated with creating more choices, should be maximized for the transformation of social structures rather than for the maintenance of the structures of domination.

In analyzing *aggression and violence* we understand that all wars are fought for the control of trade, land, people, and/or other resources (J. W. Smith, 1994). When necessary resources are scarce, or are perceived to be scarce, increase in competition and aggression is inevitable. Furthermore, domination is achieved through the accumulation of both allocative and authoritative resources. Increased competition results in increased ethnicity and racism. These are all characteristics of hierarchical systems. As Benedict (1992) observed from her review, "The conclusion that emerges is that societies where nonaggression is conspicuous have social order in which the individual by the same act and at the same time serves his own advantage and that of the group" (p. 59).

She further notes that "nonaggression occurs not because people are unselfish and put social obligations above personal desires but because social arrangements make these two identical" (p. 59). We suggest that such social arrangements are heterarchical structures and democratic processes. Militarism, the development and use of weapons of mass destruction, occurs for the primary purpose of accumulating and protecting ownership of material wealth and obtaining or maintaining domination (J. W. Smith, 1994) and is thus an effective goal of capitalism.

The connection of the university to power and violence is straightforward in that without scientists in the physical sciences, weapons of mass destruction would not be built. Likewise, without the work of social scientists, the masses of people would not allow these weapons of mass destruction to be used on themselves (see Herman & Chomsky, 1988). The linking of science and technology and thus universities and corporations, and in turn corporations (including multinational and government agencies) and nation-states, is well documented (e.g., Aronowitz, 1988; Soley, 1995). It is also often denied. Two of the most revealing and well-researched works are those of Simpson (1994) and Soley (1995). Soley's

work concerns the trend since the Reagan years, which is moving us back to corporate domination of universities (see our discussion below), while Simpson examines an earlier period. Simpson (1994) fully documents how the U.S. government's psychological warfare programs helped to shape mass communication research into a distinct scholarly field and reciprocally advanced the goals of the government officials' propaganda program. (For a detailed review of what this program of psychological warfare was about we encourage readers to consult Simpson, 1994.) While the United States has the most sophisticated propaganda apparatus ever assembled, it is also the most violent nation-state in history. It also follows that the United States, as a nation-state, is one of the most asymmetrical in terms of the balance of material wealth (Sklar, 1995).

To further tie the relationship between science, capitalism, and violence together as briefly as possible here, but in a general way, we again quote from Simpson (1994) who states,

Since World War II, the U.S. government's national security campaigns have usually overlapped with the commercial ambitions of major advertisers and media companies, and with the aspirations of an enterprising stratum of university administrators and professors. Military, intelligence and propaganda agencies such as the Department of Defense and the Central Intelligence Agency helped bankroll substantially all of the post-World War II generations' research into techniques of persuasion, opinion measurement, interrogation, political and military mobilization, propagation of ideology, and related questions.

For years government money — frequently with no public acknowledgement and apparently illegally — financed more than 75 percent of the budgets of major communication research institutes (Simpson, 1994; Soley, 1995).

The relation between universities and the U.S. military is long and intimate. Given our model (Figure 1) and discussion, it is clear from our perspective that this relationship is not a simple linear one. A scientist's desire for the challenge of discovery and for material comfort, which the pursuit of this challenge can bring, drives him or her to work on such projects as building weapons of mass destruction. Adding the further complication of such concepts as patriotic duty and science as separate from values, it is not difficult for a scientist to rationalize a moral justification for this kind of work. Further, because of fragmentation, scientists are divorced from the actual use and decisions about the use of such weapons. Loss of decision making can mean loss of responsibility. Yet, it is clear that without scientists there would be no production and use of weapons of mass destruction.

Boyer's Failure to Evaluate the Socioeconomic System

The record of Western science is mixed. Along with all the advances in technology and industry comes five hundred years of oppression and destruction. Universities must take a major responsibility for this destruction, as they must take a major role in halting the slide down the slippery slope of self-elimination. The university in the context of capitalism clearly must be evaluated. Here Boyer makes an attempt at this analysis by noting that there are "growing social separations and divisions on campus, increased acts of incivility, and a deepening concern that the spirit of community has diminished." Boyer rightly believes that responsibilities of faculty go beyond scholarship, that they extend into campus life as a whole. He states that, "beyond the campus, America's social and economic crises are growing — troubled schools, budget deficits, pollution, urban decay, and neglected children, to highlight problems that are most apparent" (p. 3). The problems that Boyer identifies are significant, but in comparison to problems of violence, cultural and environmental destruction, starvation, and so on, they pale (e.g., Devine & Wright, 1993). In glossing over social problems Boyer plays into the hands of "maintaining the status quo" and leaving the social hierarchical structure of the university intact. Boyer goes on to say,

The challenge then is this: Can America's colleges and universities, with all the richness of their resources, be of greater service to the nation and world? Can we define scholarship in ways that respond more adequately to the urgent new realities both within the academy and beyond? (p. 3)

What Boyer's analysis fails to show is that universities are part of the problem as well as the solution. "Professors believe themselves to be, by and large, free and independent thinkers not held to account by benefactors and boards of trustees" (Douglas, 1992, p. 25). But how free are they?

The Socioeconomic and University Connections

Even though Western science has established itself to be superior to all other forms of discourse in matters of truth, it has always been subordinate to power (Aronowitz, 1988; Chorover, 1979; Simpson, 1994). The relationship between capitalism and the university is not well understood, given the plurality of causal relationships. We describe the relationship only in the general terms of mutual and reciprocal. This is not to be construed as a relativist's view; as Bhaskar notes, there is a hierarchy of causality, and therefore detailed analysis is required for full understanding. But if the socioeconomic system is hierarchical and hegemonic, then the university system is most likely to be hierarchical and hegemonic also. Given the university's dependence upon material re-

sources for its existence, it would be difficult to be otherwise. Therefore, a change in the latter system requires a change in the former. The implication is that scientists must assume a large share of the responsibility for the social record, knowing that the social world is no success story. Therefore, they must also assume a large responsibility for emancipation and reformation. Clearly, there is more to be done at universities than simply tinker with the reward system.

Implications for Change

We conclude by considering the implications of our analysis. There is little question that universities today are structured hierarchically with a board of regents, boards of trustees, presidents, provosts, deans, faculty, students, and staff. There are differences among the various universities and colleges throughout the United States, but in general faculty have relatively little decision-making power. Boards make all final decisions in university matters, and the administration makes nearly all decisions regarding the distribution of resources. With little or no say in the distribution of resources, faculty decision-making power regarding academic matters has limited impact, at least to the extent that the latter is dependent upon the former. In effect, faculty are given decision-making power as long as they do not upset the social order. But power is never zero-sum. Although faculty most often only make recommendations, they do have agency and can foster change.

In keeping with our model, we offer general principles. Our approach is to ground strategies in the notion that actions must be local and individual, goals must be global (encompassing). But progress must be constantly monitored regarding the relationship between local activity and global goals. Organizational structure will emerge from these individual actions. The goal we envision is a world-wide heterarchically structured system of education within a global heterarchical socioeconomic system. This calls for liberation as a continuous developmental process.

On a large scale, we believe that from the pursuit of the goals and behavioral outcomes under heterarchies the desired social structures will emerge. On the other hand, from what we understand from complex systems theory, "grand plans" are not likely to succeed. Open systems make long-term predictions precarious. Grand plans also imply top-down imposition. In our view, any "plan" must conceive liberation as a more or less gradual and open-ended progress from unwanted and oppressive determinations to wanted and enabling ones (Bhaskar, 1989, p. 6). Actions must be guided by a system of values rather than a system of rules. We believe that genuine empowerment, based upon the conceptualization of

agency and power described above, is the mechanism for change. Emphasis is to be placed upon individual needs that mutually enhance the collective, rather than upon the "needs" of the collective with its responsibility to the individual. This is in counterdistinction to both Marxism and capitalism. It is through the efforts to satisfy *all* individual needs that the satisfaction of the collective is realized. All persons have the power within themselves to become liberated given the appropriate context. Liberation is not something done to an individual but something an individual does.

In determining a strategy that can bring about change, the important question is: How is the organizational structure of the university and the larger society to be transformed, given the enormous resistance due to long tradition and a tremendous imbalance of power? The strategy we propose for universities is a simple one in concept but perhaps more difficult in practice, at least initially. We believe that the key to change is the gradual transferral of decision-making power to all individuals. Details for this change must come from faculty groups at each university because of the change in context. People must be allowed real choices, including the choice of not choosing, while realizing that democracy is not easy. Within the university system there must be true participatory democracy, where all those who are affected by decisions should participate in their disposition (Albert & Hahnel, 1991; Hahnel & Albert, 1990; Sale, 1980). Individual actions must be dual: (a) individuals must challenge, through rational and moral critique and action, all attempts at domination by others; and (b) each must also exercise self-reflexive criticism. By the latter we mean, each individual must challenge their every temptation or opportunity to dominate others.

We suggest replacing career ladders where faculty rise through the ranks to become administrators removed and isolated from the real "business" of the university, discovery and dissemination of knowledge, with career lattices where administrative positions are webs of roles that change hands and impose fewer limits on individuals, their talents, and their interests. We envision a university where talents better match with tasks, promotion and tenure are reconceived, and a community of scholars works on important problems using a broad array of techniques of discovery. Furthermore, inter- and cross-disciplinary study would become far more common as scholars became more problem-oriented and less paradigm-restricted.

We have offered a model of scholarship as discovery and dissemination grounded in a heterarchically organized system — a system we equate with a community of scholars dealing with significant human and social problems. We believe that such a refocusing of task and system

will have a far greater impact on the quality of campus life than any efforts at tinkering with faculty rewards in a system that is beyond repair.

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Adult Students in Higher Education

Burden or Boon?

Since the mid-1970s, universities in the United States have recruited substantial numbers of students from the older sections of the population. Indeed, during this period the proportion of so-called adult students (i.e., those who are over the age of 22 at the time of their entry into higher education) has equaled the proportion of so-called traditional students (i.e., those aged between 18 and 22 on entry) (e.g., Lenz & Shaevitz, 1977, p. 4). This influx of older students has been prompted by demographic, economic, and technological developments (see Merriam & Caffarella, 1991, chap. 1). A similar situation has arisen in Australia, where students aged 25 or over on admission are described as "mature-age" students (see Hore, 1992), and in the United Kingdom, where students aged 21 or over on admission to undergraduate courses and those aged 25 or over on admission to graduate programs are described as "mature students" (see Griffin, 1992, pp. 61–63). However, in the United Kingdom, this has been the result of changes in national government policy and funding arrangements.

As these examples illustrate, the definition of "adult" students is somewhat arbitrary and varies both within and across national systems of higher education (Hore, 1992). Solomon and Gordon (1981, p. 2) commented that some U.S. agencies classified all students aged 17 or older as "adults." In many countries, the legal age of adulthood for most purposes is 18 or younger; consequently, even traditional college stu-

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dents are, strictly speaking, adults. In addition, one should beware of treating "adult" students as a single homogeneous group. They are more diverse than younger students in their motivations, needs, expectations, and experiences of higher education (Britton & Baxter, 1994; Hore, 1992; West & Eaton, 1980). An obvious contrast is between the experiences of men and women as adult students (e.g., De Groot, 1980; Maynard & Pearsall, 1994), but there are also major differences between adult students at different stages of the life course (Britton & Baxter, 1994; Clennell, 1984, 1987; Thacker & Novak, 1991). Nevertheless, this article is concerned with challenging stereotypes that are applied generically to adult students.

As Marshall and Nicolson (1991) pointed out, discussions about the role of adult students in higher education tend to stress their supposed needs rather than the potential benefits they can bring (for examples in the U.S. literature, see Lenz & Shaevitz, 1977; Schlossberg, Lynch, & Chickering, 1989; Solomon & Gordon, 1981). In 1993 the American Psychological Association (APA) published a *Handbook for Enhancing Undergraduate Education in Psychology* (McGovern, 1993), and this contained a chapter by Ware et al. (1993) that included the following remarks with regard to developing and improving advising strategies for faculty:

There is a growing descriptive, and sometimes empirical, literature on the special needs and environments for adult students and the opportunities such environments provide for enhanced learning. . . .

One example of a specific need of adult learners includes adjusting after reentry into the academic environment. Adult students often must confront issues of balancing family and career demands. Some women who reenter the academic scene have to consider the prospect of taking low-paying jobs in clerical or social services areas. Traditional advising strategies can handle some, but not all, of the special needs of such students. . . .

Adult students confront somewhat novel problems in adjusting to a traditional academic setting. They express fears about competing and fitting in with 18–22-year-old students. They question their ability to understand and retain large quantities of information. Although they may be effective problem solvers for many life demands, adult learners may exhibit fewer skills for coping with an academic environment.

Identifying and discussing reentry concerns can facilitate the reduction of such fears. Encouraging adult learners to find and to discuss their concerns with other adult learners can reveal the common and situational versus personal nature of many fears.

Adults who struggle through demanding courses in study groups with 18–22-year-old students can discover that the two age groups have more in common than they could have imagined. When genuine problems related to study skills or content areas (e.g., mathematics) arise, faculty can clarify that such problems are not unique to adults and can use conventional advising strategies or refer those adults to appropriate professionals.

Many adult learners shy away from advising about job search skills or graduate school. They think that adults should know about getting jobs and that graduate school is only for young people. Exploring and clarifying these and other occupational and educational misconceptions constitute challenges for advisers. . . .

One problem experienced by many adult women (and increasing numbers of men) who major in psychology is balancing the dual commitments to family and career. . . . Development and use of time management skills can be a boon to otherwise overextended women. Adult women can benefit from learning decision-making or planning strategies for careers or graduate school. (pp. 53, 62–63)

We have quoted from this chapter at some length for two main reasons. First, Ware and his colleagues seemed to be characterizing adult learners as a group of students for whom the experience of higher education would be inherently problematic. This might be attributed to the fact that the chapter was written to enhance faculty's advisory role, and so it highlighted the difficulties and supposed special needs of these individuals rather than their strengths or their strategies. Second, however, these limited sections in the chapter by Ware et al. are all that a publication of the APA aimed at "enhancing undergraduate education in psychology" has to say concerning the aspirations and experiences of adult learners. This is in spite of the fact that for this group psychology is a popular academic choice, and adult students are likely to constitute the majority of the students who are majoring in that discipline, especially in metropolitan universities that offer greater opportunity for part-time study outside of normal hours.

A further concern is that these passages arise during the course of a discussion of how advisers might deal with an increasingly heterogeneous student population, and in the space of just a few paragraphs Ware et al. discussed, in turn, "the special needs of adults, women, and ethnic minority group members" (p. 62). This gives the unfortunate impression that these three groups somehow represent three discrete constituencies. However, there is a more fundamental problem with this account. It is entirely right that educators should be attuned to the needs of different groups, but the experiences of adult students in higher education should not be likened to the predicament of women working in a male-dominated organization or of ethnic minority groups living in a majority culture.

Of course, in comparison with the "traditional" student population, the body of adult students does include disproportionate numbers of women and members of ethnic minorities, and they do collectively share a common underpinning with these groups. Taken together, these students constitute a large "nontraditional" student body, and they are sub-

jected to an interactive web of entrenched values from long-standing elitist systems. Nowadays, indeed, there are powerful pressures promulgating change and opportunities for wider access to higher education (although the former has not necessarily resulted in the latter). However, the interest of the "gatekeepers" to maintain the status quo is such that there is as yet little evidence of a more comprehensive and open system (see Fulton & Elwood, 1989).

Nevertheless, for a number of reasons it is problematic to consider the position of adult students alongside issues of gender and culture. Although the majority of adult students in both the United States and the United Kingdom are women (Department for Education, 1992a, 1992b; Lenz & Shaevitz, 1977, p. x), adult students are not typically under-achievers from either ethnic minority or lower social-status groups, as proposed, for instance, by Hopper and Osborn (1975). Indeed, Woodley, Wagner, Slowey, Hamilton, and Fulton (1987) found that many adult students had left secondary school in a position of relative educational advantage and had chosen to defer their entry into a university despite having the necessary qualifications. Given their diversity as a population, consideration of adult students and their needs should take into account a multiplicity of factors and not give credence to simplistic or reductionist notions (see Schlossberg, 1984).

Nor is the foregoing illustration simply an isolated example of the manner in which adult learners have been represented in APA publications. An earlier volume that was aimed at helping students to prepare themselves to pursue a degree in psychology contained just a single chapter covering less than three pages about the "reentry of men and women in psychology." This text was solely concerned with the problems that adult students have to overcome before, during, and after a bachelor's degree (Lunneborg, 1987; see also Lunneborg, 1988). Such accounts diverge markedly from the views of many faculty who have had the experience of teaching older students. According to a survey carried out in Australia by Boon (1980), these faculty members often observe that adult students "perform better overall than normal age students, that they have a positive influence on the course, and that their tutorial contribution is considerably better than that of normal age students" (p. 130).

It would be foolish to deny that the burdens and demands placed upon adult students are qualitatively different from those placed upon younger students. To be sure, adult students often have domestic, financial, and other commitments that make them less able than younger students to take courses at more prestigious or expensive institutions of higher education (see Solomon & Gordon, 1981, p. 115) or at institutions that are

geographically remote from their homes (see Edwards, 1993, p. 54). There also appear to be gender differences with regard to adult students' lack of confidence in their abilities and with regard to restrictions on their study time due to domestic commitments (Smithers & Griffin, 1986; Woodley et al., 1987).

In addition, we have found that many adolescents failed to continue their formal education after the minimum school-leaving age because of negative experiences within their families or at school and that these experiences often disrupt their subsequent attempts to realize their intellectual potential by returning to formal education as adults (King, 1993). This is simply one example of how learning may be influenced by the socio-emotional context in which it takes place. Paradoxically, if these adults are to be successful in negotiating their entry into higher education, then compensating for and, to some extent at least, overcoming these disadvantages can actually become a strength for them as learners.

Feminist writers insist that learning should be regarded as a holistic process (Belenky, Clinchy, Goldberger, & Tarule, 1986; Gilligan, Ward, McLean Taylor, & Bardige, 1988; Weil, 1988), and yet most of the mainstream literature on learning neither reflects the experiences of learners nor acknowledges that ideas cannot be separated from experience. Boud, Cohen, and Walker (1993) showed how context and purpose can influence learning; in particular, feelings and personal interests may have a vital role to play. It can therefore be argued that, although adult students encounter a number of barriers to higher education (Smithers & Griffin, 1986), they are capable of more effective and elaborative learning than younger students precisely because they are likely to be far more adept at examining and exploiting their prior experience in order to make sense of new information and new situations (e.g., Knowles, 1984; see also Edwards, 1993, chap. 5; Harper & Kember, 1986; Merriam & Caffarella, 1991, pp. 108, 307–309). Our purpose in this article is to dispute the implication of the accounts that are commonly given that adult students will prove to be less effective and less successful as students simply because they are adults.

It is clear that adult students are consistently stigmatized in terms of their capacity to benefit from higher education and that these negative stereotypes are shared by at least some educators, both as individuals and also corporately through organizations such as the APA. Haselgrove (1994) suggested that educationalists have been led to construe the experience of adult students as problematic because it stemmed from roles other than that of learners; in other words, adult students tend to be regarded as having "difficulties" with studying in higher education because the rest of their lives (financial, emotional, and personal) impinges

on the only role in which institutions are prepared to recognize them. As Haselgrove shrewdly commented, "The unacknowledged reality is, of course, that these roles have always impinged on students' experience of higher education but the prevailing culture did not permit its articulation" (p. 6). Nowadays, of course, such "nonacademic" factors affect the lives and experiences of increasing numbers of younger students, too.

Nevertheless, negative stereotypes of this sort seem to be shared by a good many adult learners themselves (Doty, 1967; Maynard, 1992; Smithers & Griffin, 1986, pp. 103–105; Squires, 1981; Woodley, 1981; Woodley et al., 1987, pp. 119–120). The resulting lack of self-confidence may undoubtedly generate appreciable levels of anxiety among adult students. Although this scarcely counts as demonstrating the validity of those stereotypes, it could lead adult students to behave in ways that tend to confirm those stereotypes. In other words, this situation might well constitute a "self-fulfilling prophecy" (cf. Snyder & Swann, 1978).

The basis for these stereotypes is often left wholly unarticulated. However, insofar as they have a serious rationale, it seems to run more or less along the following lines (see, e.g., Percy, 1985; Roberts & Higgins, 1992, p. 16; Woodley, 1984): Adult students do not have recent experience of formal education; consequently, they may be out of practice in the art of learning and lacking in basic study skills. As a result, they will tend to adopt less effective approaches to studying in higher education. They may also exhibit increased learning difficulties as the consequence of age-related impairment in intellectual abilities. In either event, they will be less likely to complete their courses of study than younger students and will demonstrate poorer academic attainment in terms of their final degree assessment. We wish to dispute each stage of this argument.

Study Skills

The idea that studying in higher education relies upon a variety of basic skills is a fairly congenial one. However, the stronger position that there is one specific set of skills that constitutes effective studying and therefore guarantees better learning outcomes has largely been discredited (see Cowan, 1989; Entwistle, 1992; Ford, 1980; Gibbs, Morgan, & Taylor, 1980). Self-reports of studying behavior do sometimes reveal a "study skills" factor, but scores on this factor fail to show any consistent relation with academic performance (Biggs, 1970). Moreover, although manuals and guides intended to promote study skills have a fairly long history, it is also a fairly checkered one (Beard & Hartley, 1984, chaps. 6 & 7).

Gibbs (1981) was one of the first people to emphasize that any skills involved in being an effective learner need to be acquired in the context of students' everyday academic activities rather than taught in a purely mechanistic and general manner. Indeed, the available evidence indicates that formal study-skills courses that are organized apart from the normal teaching program will probably be ineffective or even counter-productive, even if they are taught by teachers of the relevant academic discipline. Genuine improvement can be achieved only by directly addressing students' conceptions of the learning process in a way that is linked to both the content and the context of learning, and even when these conditions are satisfied the amount of improvement is likely to be modest (Gibbs, 1992; Martin & Ramsden, 1987; Ramsden, Beswick, & Bowden, 1986).

Are these conclusions not contradicted by the experience of countless students who elect to participate in study-skills programs and who usually judge them to have been beneficial (e.g., Chibnall, 1979; Hills & Potter, 1979)? Conway and Ross (1984) compared students who had undertaken such a program with others who had been randomly assigned to a waiting list and found that the main reason why the former students reported an improvement in their study skills was that they retrospectively denigrated their previous skills. Although their subsequent academic performance was no better than that of the students on the waiting list, many of them continued to insist that the program had been beneficial despite having been advised to the contrary at their debriefing (Ross & Conway, 1986). This indicated that they had reconstructed their autobiographical memories to fit an implicit but invalid theory concerning personal change (see also Ross, 1989). From our own experience, however, what may be more pertinent to the individual is the enhanced confidence and learner identity that can result from attending such programs.

One domain in which adult students are sometimes said to encounter problems is that of time management (e.g., Wheeler & Birtle, 1993, p. 85), despite the fact that many adult students have been successfully juggling a variety of domestic and occupational responsibilities for several years. Trueman and Hartley (1996) built upon previous research conducted in the United States in developing a self-report scale on time management for use with British students. Although there were some statistically significant correlations between scores on long-term planning and subsequent academic performance, these relationships were fairly trivial in their magnitude. Moreover, Trueman and Hartley found that students who had been aged 25 or over at the time of their entry into the university reported making more use of time-management strategies than either younger adult students aged between 21 and 24 at the time of

entry or traditional-age students. Clearly, this pattern of results does not support the stereotype of adult students being deficient in terms of the skills needed for effective studying.

Approaches to Studying

Because it is questionable whether there is a determinate set of skills that constitutes effective studying in higher education, the idea that adult students are in some sense inferior to younger students in how they go about the business of learning needs to be addressed indirectly by considering the approaches or orientations toward studying exhibited by different students. There is, indeed, a general consensus in the research literature that students in higher education manifest specific approaches to learning that are dependent on the context, content, and demands of the learning task (see, e.g., Marton, Hounsell, & Entwistle, 1984; Richardson, Eysenck, & Warren Piper, 1987):

1. Students may manifest a "deep" approach or an orientation toward comprehending the meaning of the materials to be learned. This outcome is likely if they acknowledge the more abstract forms of learning demanded in higher education and are motivated by the relevance of the syllabus to their own personal needs and interests.

2. Students may adopt a "surface" approach or an orientation toward merely being able to reproduce the materials for the purposes of academic assessment. This outcome is more likely if they encounter an overloaded curriculum or methods of assessment that emphasize the retention of the superficial properties of the materials to be learned.

These approaches to studying were originally identified by the use of semistructured interviews but were subsequently operationalized in terms of different patterns of responses to inventories and questionnaires. One recent survey of the literature found that this broad distinction between two fundamental approaches or orientations to studying had consistently emerged from research carried out in a variety of different countries, including the United Kingdom and Australia as well as the United States (Richardson, 1994a). Nevertheless, these two approaches or orientations appear to be interpreted in a manner that is distinctive to each cultural context, and their detailed manifestation may well vary from one system of higher education to another.

Those students who may be regarded as objectively deficient in terms of "study skills" insofar as they produce weak academic performance and are referred for remedial advice show a greater dependence upon repetitive methods of studying at the expense of a deep approach (Moss, 1982). Two other studies have found that academically unsuccessful stu-

dents produced incoherent or "unorchestrated" patterns of responses to questionnaires on study behavior (Entwistle, Meyer, & Tait, 1991; Meyer, Parsons, & Dunne, 1990). It therefore follows from a negative stereotype of adult students as being deficient in study skills that they should adopt less desirable approaches to studying than younger students. In fact, the available evidence obtained from the use of several different research instruments is remarkably consistent in showing the opposite: Adult students are actually more likely than younger students to exhibit a deep approach or a meaning orientation toward their academic studies, and they are conversely less likely than younger students to adopt a surface approach or a reproducing orientation to their academic work (Richardson, 1994c, 1995).

To be quite blunt, as Harper and Kember (1986) pointed out, "Older students, rather than their younger counterparts, display those learning characteristics which traditionally higher education has purported to be striving to develop in students" (p. 220). Harper and Kember put forward three possible explanations for this: first, that adult students were motivated more by intrinsic goals than by vocational ones; second, that younger students acquired a surface approach to learning in their final years of secondary education; third, that the prior life experience of older students promoted a deep approach to studying in higher education. Richardson (1994c) concluded that there was some support for each of these explanations in the findings of empirical research, although in the United States the primary goals of adult students and of younger students appear to be remarkably similar (Solomon & Gordon, 1981, pp. 113–115).

Intellectual Ability

To justify the negative stereotyping of adult students as deficient in study skills, some commentators even appeal to the research literature concerning age-related deficits in cognitive performance. Thus, Woodley (1984) proposed that the capacity for learning may have decreased in older students, "both in terms of memory and in terms of the mental flexibility required to adapt to new perspectives" (p. 47). Similarly, Wheeler and Birtle (1993) suggested that adult students might be "at a disadvantage compared to younger students with respect to their adaptability, the speed with which they are able to work, and their retentive capacities" (p. 92).

In a recent article, Richardson (1994b) criticized the idea that academic performance in students is impaired by deficits in intellectual ability, and we will therefore mention only the most salient points of the argu-

ment here. Age-related changes in intellectual performance are often assumed to result from physiological changes in basic intellectual capabilities, but Dittmann-Kohli and Baltes (1990) argued that they might equally stem from "the pragmatic dynamics and contexts of adult life" (p. 65). In particular, it seems that older people tend to change both their behavior and their self-evaluations as a response to the imposition of societal expectations (e.g., Coupland, Coupland, Giles, Henwood, & Wiemann, 1988; Giles, 1991; Perlmutter, Adams, Berry, Kaplan, Person, & Verdonik, 1987). Although older people are more likely to complain about the deterioration of their memory in general, these complaints may prove to be unsubstantiated in terms of their objective memory performance (Kahn, Zarit, Hilbert, & Niederehe, 1975) and their reports of particular kinds of memory failure (Cavanaugh, 1987; Hultsch, Hertzog, & Dixon, 1987). This suggests that older people may be retrospectively exaggerating their previous memory ability to fit an implicit theory that is based on societal stereotypes about the adverse effects of aging (cf. Ross, 1989). These stereotypes influence the causal attributions made by both young and old subjects, in that they ascribe memory failures in an older person to intellectual impairment, but they ascribe precisely the same memory failures in a younger person to a lack of attention (Erber, Szuchman, & Rothberg, 1990).

Age-related changes in intellectual performance also typically amount to a reduction in "fluid intelligence" or in what psychologists nowadays characterize as the available central capacity for information processing (see Klatzky, 1988). Conversely, there may be little or no decline with advancing age, and even continuing growth, in "crystallized intelligence" and especially in tasks that have to do with expertise and the development of systems of knowledge (Baltes, Dittman-Kohli, & Dixon, 1984) or what in everyday language may be described as "wisdom." Indeed, Hoyer and Rybash (1994) argued that cognitive expertise (or crystallized intelligence), wisdom, and other adaptive competencies may well ensure that the period of adulthood offers the greatest potential and opportunity for utilizing the rest of one's capabilities. More precisely, the analysis of "wisdom" that was proposed by Dittmann-Kohli and Baltes (1990) implies that older people would be more capable of exhibiting the interpretative, contextualized, and relativistic conceptions of learning that other commentators have claimed to constitute genuine intellectual development among university students (e.g., Marton & Säljö, 1984; Perry, 1970, 1981; Säljö, 1979).

A further point to be made is that the performance of older people in cognitive tasks may well depend on the perceived relevance of those tasks in everyday life. In this connection, Baltes, Dittman-Kohli, &

Dixon (1984) suggested that older people tended to optimize their adaptation to the demands of everyday life in the face of a reduced central capacity for information processing by deemphasizing irrelevant skills. In a similar way, Perlmutter et al. (1987) came to the conclusion that "in all likelihood many age changes in memory are adaptive and advantageous in most important life situations" (p. 63). However, as Baltes, Dittmann-Kohli, & Dixon (1984) pointed out, researchers interested in changes in intellectual capacity across the lifespan have persisted in using tests that were originally devised for the assessment of children or young adults and are likely to be perceived as being of limited practical significance in the lives of older adults.

When the test performance of older individuals is thus constrained by the research methodology itself, it is not really surprising that it fails to match that of young adults and is consequently regarded as deficient (Coupland & Coupland, 1990). Nevertheless, this suggests that research on intellectual function in older people has been guilty of bolstering ageist stereotypes and of ignoring more positive aspects of human development (see also Schaie, 1988). This criticism applies especially to discussions of the intellectual abilities of adult students that are based upon the supposed findings of that research. Fortunately, growing numbers of researchers are turning their attention to areas of cognitive functioning and intellectual activity in which older people may show little or no reduction in their performance (see Baltes & Baltes, 1990b; Cerella, Rybash, Hoyer, & Commons, 1993).

The final point is that age-related cognitive deficits can usually be demonstrated only in people drawn from the general population who are over the ages of 50 or 60 (see Baltes, Dittmann-Kohli, & Dixon, 1984; Schaie, 1990). In such individuals, a decline in cognitive function is often linked with poor physical health or physical disablement (Steuer & Jarvik, 1981). Of course, poor physical health often requires the greater use of medications that may themselves adversely affect intellectual functioning (National Institute on Aging Task Force, 1980). However, as a recent authoritative account concluded, "Under favorable environmental and medical conditions, many older adults continue to have the potential to function at high levels" (Baltes & Baltes, 1990a, p. 12; see also Schaie & Willis, 1991, pp. 420–422). Even so, this research literature is largely irrelevant to assessing the potential of adult students, because very few universities contain significant numbers of students within this age range.

One exception is the United Kingdom's Open University, which delivers nearly all of its courses by part-time distance learning (using specially prepared correspondence materials plus television and radio

broadcasts), with tutorial assistance at a local level. This institution admits people over the age of 18 to its undergraduate program without imposing a formal entrance requirement. Those of its students who are over the age of 60 are atypical of the general population in terms of their abilities and motivation, and one of their most striking features in comparison with younger students is their level of dedication to their education (Bilston, 1989). In assessments, the students in this age range do not necessarily experience problems in the areas of memory and concentration, even if they themselves regard memory as a cause for concern (Clennell, 1984, 1987), nor do they demonstrate objective deficits in the retention of formally acquired knowledge (Cohen, Stanhope, & Conway, 1992).

Nevertheless, the majority of adult students in higher education are between the ages of 25 and 34 (Solomon & Gordon, 1981, p. 5; Woodley, 1984), and the evidence suggests that their cognitive abilities are broadly the same as those of younger students (see Thorndike, Bregman, Tilton, & Woodyard, 1928, pp. 178–179, for an early account). Moreover, within this age range intellectual performance exhibits much greater inter- and intraindividual variability, and this in turn indicates that chronological, biological, and maturational factors are far less important during adulthood than are idiosyncratic influences and experiences (Hoyer & Rybash, 1994).

Academic Performance

If older students were deficient in the basic skills or abilities that are needed for effective studying in higher education, then it would follow, by definition, that their academic outcome should be poorer than that of younger students: (a) Adult students should be more likely to fail their courses of study or to withdraw from them on academic grounds; and (b) those adult students who do manage to complete their courses should show poorer academic performance during their courses and poorer academic attainment.

It is difficult to assess these predictions with regard to the United States, because relevant national statistics are not routinely collected. Early studies indicated that performance improved after the age of 21, but until the late 1970s many older students were returning service personnel encouraged to undertake higher education under the GI Bill, which acted as a means of promoting equal opportunity but which also prevented them from flooding the labor market (Rockhill, 1985). Eaton (1980) pointed out that such entrants would probably have had access to additional training in the areas of science and mathematics during their

periods of military service, and she reviewed a number of studies that tended to confirm the relatively good academic performance of returning service personnel.

Another consideration is that in the United States for financial and vocational reasons adult students may often be pursuing different degree programs by different modes of study. Solomon and Gordon (1981, p. 116) found that adult students were more likely than younger students to be successful in pursuing an associate of arts (AA) or a master's degree within a period of seven years, whereas younger students were more likely to be successful in pursuing a bachelor's degree within seven years. They attributed this to the fact that younger students who were successful on AA programs were likely to proceed to a bachelor's degree, whereas adult students might have seen an AA as sufficient for their immediate career needs, and to the fact that many adult students undertake bachelor's programs by part-time study and are therefore less likely to attain their degrees within a period of seven years.

In the follow-up survey that Solomon and Gordon (1981) carried out, the adult students reported having achieved grade-point averages (GPAs) in their studies that were only slightly lower than those reported by the younger students. They concluded that, "although adult students came to college feeling less prepared than their traditional-age counterparts, this perceived lack of preparation did not seem to hamper their ability to perform almost as well in their college courses as those who were younger and supposedly better prepared" (p. 116). However, retrospective self-reports of GPAs are known to be subject to reconstructive biases (Conway & Ross, 1984), and so these results cannot be accepted as an objective assessment of the academic ability of adult students and their younger counterparts.

Relevant statistics are collected at a national level in the United Kingdom, where the vast majority of undergraduate degrees are awarded as first-class honors, upper second-class honors, lower second-class honors, and third-class honors. A "good" degree is often defined as one awarded with first-class or upper second-class honors. Until recently, degrees were awarded either by the universities as autonomous institutions or by the Council for National Academic Awards (CNAA), which validated programs of study in other institutions (mainly polytechnics and colleges of higher education). However, with the 1992 Education Act, the CNAA was abolished, some of these institutions became new universities with degree-awarding powers, and the remainder had to seek validation of their courses from the older universities.

Woodley (1984) analyzed the aggregated completion rates on bachelor's degrees from the intakes in 1972–1974 of all U.K. universities. He

found that 83% of entrants aged 21 and over had successfully completed their degrees compared with 87% of entrants aged less than 21. He commented that there was little variation in completion rates if the students were classified into more narrowly defined age groups and that any tendency for older students to be less likely to complete their degrees than younger students was due to an increase in the proportion of students who had withdrawn for nonacademic reasons (such as ill health) and not to an increase in the failure rate.

Nevertheless, aggregated data obscure differences among individual academic disciplines and departments, and Woodley's findings could well be attributed to a tendency for students from different age groups to follow programs of study in disciplines or departments with different completion rates. Research carried out within particular institutions in the United Kingdom (Richardson, 1995) and Australia (Kember & Harper, 1987) has shown that older students are actually more likely to complete their courses of study when the effects of other factors have been statistically controlled by means of multiple regression techniques. It has, moreover, been confirmed that noncompletion in adult students is normally due to personal or financial factors rather than to academic failure (Lucas & Ward, 1985; see also Hore, 1992), although the former can certainly contribute to the latter and may affect younger students as well.

Woodley also analyzed the degree performance of all graduates from the 1972–1974 intakes of all U.K. universities. He found that 32% of the graduates aged 21 and over on admission had obtained a good degree (i.e., first-class or upper second-class honors), compared with 33% of those aged less than 21. He concluded that those adult students who graduated were overall just as likely as younger students to achieve a good degree. If anything, adult students tended to obtain better degrees than younger students in the arts and the social sciences, but the reverse was true in science disciplines. Woodley concluded that in the former subjects the extra life experience of adult students could be translated into greater academic success, whereas the break in their full-time education had also resulted in a decline in their mathematical and scientific skills. Of course, it is equally true that the topics covered in the arts and the social sciences may be more relevant to prior life experience.

Here, too, however, there is a difficulty with the interpretation of aggregated data, because Woodley's findings could be attributed to a tendency for students from different age groups to take degrees in subjects within the categories of arts, science, and social science or at institutions of higher education that exhibit different distributions of degree classes. Subject differences in the distributions of degree classes have been

noted by several commentators. These are typically discussed in terms of the tendency for proportionately more first-class and third-class degrees to be awarded in the physical sciences and engineering than in the arts, social sciences, and humanities (e.g., Clarke, 1988). Nevertheless, these same data show clear and consistent differences in the proportion of "good" degrees awarded. In one recent analysis, medicine and dentistry had a fairly low proportion of good degrees, but paramedical subjects, languages, biology, and humanities had a relatively high proportion of good degrees (Johnes & Taylor, 1990, p. 112).

In the United Kingdom, adult students are not evenly distributed across different subjects; instead, they are relatively overrepresented in the humanities and social sciences and are relatively underrepresented in science, engineering, and medicine. This can be attributed to at least three possible factors: the entrance requirements prevailing in different academic disciplines; the willingness of the departments that represent different disciplines to consider applications from older candidates; and the perceived relevance of different disciplines to the motivation and aspirations of older candidates (Brennan, Lyon, McGeevor, & Murray, 1993, pp. 30, 39–40, 43–45).

Sear (1983) examined the results of 41,000 students who had graduated from British universities in 1979 and classified them into nine general subject groups. He found that 39.8% of the students who had been aged 24 or older at the end of their graduation year had obtained first-class or upper second-class honors, whereas 42.0% of the younger students had done so. Younger students were more likely than older students to obtain good degrees in medicine, engineering, agriculture, science, and architecture, whereas older students were more likely than younger students to obtain good degrees in education, social studies, languages, and other arts subjects.

Bourner (1987) repeated Sear's analysis in the case of the results of 24,000 students who had graduated from courses validated by the CNAA in 1983. He found that 38.9% of the older students had obtained good degrees, whereas only 33.8% of the younger students had done so (p. 18). As in Sear's findings, however, the older students were less likely than the younger students to obtain good degrees in science, engineering, and health-related disciplines. Bourner concluded that the degree results of older students were better overall than those of younger students, but that the relationship between age and degree results was neither monotonic nor independent of the field of study (pp. 38–39).

Brennan (1986) similarly examined the results of a sample of 2,642 students who had graduated in 1982 from courses in polytechnics and colleges that were validated by the CNAA. He found that 39% of the

students who had been aged 21 or older on their enrollment had gone on to achieve first-class or upper second-class degrees, whereas only 30% of the younger students had done so. Moreover, when these data were examined within 31 different subjects or subject areas, it was found that the older students were more likely than the younger students to obtain good degrees in 21 of the 31 subject areas.

Nevertheless, both these findings and those obtained in universities by Woodley (1984) could also be attributed to a tendency for students from different age groups to take degrees at institutions that yield different distributions of degree classes. Variation among institutions of higher education in the United Kingdom in terms of the proportion of good degrees awarded has been documented and seems to be independent of the particular "mix" of academic disciplines taught at any individual institution (Johnes & Taylor, 1990, pp. 105–108, 114). However, even greater variation can occur among the academic departments that teach each academic discipline in different institutions of higher education. Evidence of this has been obtained in economics (Nevin, 1972), in geography (Chapman, 1994), and in psychology (Connolly & Smith, 1986; Smith, 1990).

In the United Kingdom, adult students are differentially represented among different institutions of higher education for the same reasons that they are differentially represented among different disciplines. (At one extreme, the Open University and the new universities created by the 1992 Education Act have always recruited large numbers of adult students. At the other extreme, in 1995 the University of Oxford announced the first intake of just ten adult students from a two-year, part-time foundation course in English and social studies to its main undergraduate program.) More specifically, adult students are differentially represented across the different academic departments teaching each discipline. Rather than attempt to evaluate data that have been aggregated across disciplines or departments, therefore, it would be more valid and more appropriate to assess academic performance in students of different ages who were taking the same courses within the same institutions.

Three studies carried out in individual departments within British universities have confirmed that the academic attainment of adult students who are taking degree programs in psychology or other social sciences is essentially equivalent to that of younger students who are following the same degree programs (Hartley & Lapping, 1992; Marshall & Nicolson, 1991; Richardson, 1995). One additional study by Hartley, Truman, and Lapping (1993) matched 324 adult students with 324 younger students at the same university on the basis of both their gender and their major subjects. They found no sign of any difference between the two

groups in terms of their degree classifications. Moreover, this result did not depend on the specific academic subjects being studied; rather, the adult students and the younger students both tended to do better in the arts and the social sciences than in the sciences. This implies that adult students have no special difficulty in studying science disciplines when demographic and contextual variables have been controlled.

Conclusions

The idea that adult students are deficient in their study skills is meaningless, because there is no one specific set of skills that constitutes effective studying in higher education. In addition, adult students seem to make more use of time-management strategies than younger students. In fact, adult students generally exhibit approaches to learning that are more desirable than those of younger students in the sense that they are more compatible with the avowed aims and objectives of institutions of higher education. There is also no evidence that adult students are subject to age-related deficits in the intellectual capacities needed for studying in higher education.

Perhaps most important of all, there is no sound evidence that adult students perform less well (in terms of either their completion rates or their academic attainment) than younger students on courses of study in higher education. One can therefore be fairly definite about endorsing the conclusion of Woodley (1984) that universities should have few qualms about increasing their intake of adult students. Elsewhere, we have gone further and argued that the quality of university courses can be enriched by the admission of adult students, because it provides younger students with opportunities to learn by example from their superior approaches to studying (Richardson, 1994c).

Pejorative stereotypes with regard to the capacity of adult students to benefit from higher education can therefore be seen to be unfounded in terms of the available research evidence. These stereotypes are ageist in their content and in their implications, because they obstruct legitimate opportunities for older people to achieve personal development, financial status, and political power. They are also indirectly (although somewhat less obviously) sexist, in that the majority of adult students are female. In the United States and the United Kingdom the latter trend is even more pronounced in students over the age of 35 (Department for Education, 1992a, 1992b; Lenz & Shaevitz, 1977, p. x; Solomon & Gordon, 1981, p. 5).

That such stereotypes should continue to be sustained in the face of the experiences and the clear achievements of countless adult students is

perhaps understandable, given the more fundamental views about the adverse effects of aging that are held in Western society and given what is known about the various mechanisms by means of which erroneous stereotypes are maintained (Snyder, 1984; Snyder & Swann, 1978). Be that as it may, that these stereotypes can still be promulgated in official publications of such organizations as the American Psychological Association is, to say the least, exceedingly unfortunate. If these organizations are serious about enhancing undergraduate education, then they need to reject the stigmatization of older students and to take a more positive view of their potential contribution to higher education.

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Correlates of the SAT in Minority Engineering Students

An Exploratory Study

Project Preserve is a program designed to retain minority engineering students who have experienced academic difficulty (Morning & Fleming, 1994). The NASA-funded effort channeled African American and Latino engineering students who had failed their freshman year in predominantly White institutions into three schools noted for their support services for minorities, for their willingness to restructure those services, and for variation among institutional variables: Xavier University of Louisiana, California State University at Northridge, and City College of the City University of New York. The principal investigator (CM) coordinated efforts to find students in academic difficulty and to monitor their progress in the new environments where faculty mentors served as project directors providing support and guidance. The project demonstrated that by the conclusion of a 5-year program, 64% of over 100 would-be dropouts were still retained in engineering. Furthermore, there was evidence of cognitive development, bonding to faculty, and institutional bonding, as well as institutional variations in these outcomes.

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At a time when 67% of minority engineering students drop out (ABET, 1991; Landis, 1991), the question is, how does Project Preserve work? In a review of support programs in engineering Morning (1988) found that parity in majority and minority student retention was achieved when three program features were present: (1) attention to cognitive development, (2) close relationships with faculty and staff, and (3) a sense of community and bonding to the institution. In practice, Project Preserve attended to cognitive development by offering faculty workshops in critical thinking concepts (Whimbey & Lochhead, 1986; Resnick, 1987; Sevenair et al., 1987; Heiman & Slomianko, 1988) and providing students with Efficacy Training workshops (Howard & Hammond, 1985). Close relationships to faculty were achieved by requiring weekly faculty meetings, although there were institutional differences in the success of the bonding (see Morning & Fleming, 1994). A sense of community and bonding to the institution was fostered by requiring students to work on campus. This approach is consistent with major theories of retention that emphasize a sense of membership in the academic community, the quality of student-faculty interactions, and a student-centered campus culture (Tinto, 1975, 1987; Pascarella & Terenzini, 1977; Pantages & Creedon, 1978; Beal & Noel, 1980; Forest, 1987; Noel, 1987; Kalsner, 1991), as well as approaches to the retention of minority students in science emphasizing academic acceleration and the application of cognitive theory (Lincoln, 1979; Fullilove & Treisman, 1990; Gordon, 1986; Sims, 1992).

The lingering question for Project Preserve as well as the retention literature is, to what extent is persistence due to institutional factors and to what extent to student factors? The evaluation of Project Preserve found that both student and institutional factors appear to be at work. Students were selected for the program if their test scores, academic records, and high-school courses were indicative of success in engineering. Indeed, Morning & Fleming (1994) found that Project Preserve students at entry were, compared to norms for other minority students, bright, motivated, and scientific in inclination. However, they were also test anxious, lacking in study discipline, and had been preoccupied with social life in their previous engineering schools. Institutional differences in the retention rates after two years of the program—varying from 36% to 79% to 80%—were attributed to degree of faculty involvement, with the least involvement at CCNY and the most at CSUN and Xavier University. Thus, student and institutional factors appear to interact to produce retention outcomes.

The project also undertook a correlational analysis of major performance measures among students at entry with evaluation measures of

academic and social adjustment further to understand the factors affecting retention. An analysis of three cognitive skills found that their correlates were, contrary to expectation, up to 50% negative in nature (Fleming, Garcia, & Morning, 1995). Furthermore, the proportion of negative correlates increased with the sophistication of the cognitive skill, up to 60%, and 61% of the correlates reflecting current college experience were negative. Finally, the pattern of results appeared to vary with the race, or perhaps, supportiveness of the institution, because at predominantly Black Xavier University the correlates of cognitive skills were overwhelmingly positive. Thus, the evaluation has demonstrated that retention outcomes for otherwise able students result from the interaction of developmental relationships, anxiety, and lack of discipline with the degree of institutional supportiveness.

The present study continues to examine the consequences of major performance measures among Project Preserve students. An examination of the correlates of standardized test scores was undertaken in order to shed further light on the factors that contribute to academic difficulty in able minority engineering students. Although the SAT is designed to predict grade point average alone, there is reason to believe that an examination of correlates of test scores would serve a diagnostic purpose for minority engineering students, because predictive validity may vary with college adjustment. Charges of bias in standardized testing persist due to lower predictive validity among minority students. For example, test scores accounted for an average of 12% of the variance in grades among White students in thirteen studies (Dittmar, 1974; Fincher, 1974; Goldman & Richards, 1974; Goldman & Hewitt, 1976; Ford & Campos, 1977; Wilson, 1980; 1981; Fleming & DuBois, 1981; Willingham & Breland, 1982; Ramist et al., 1984; Tracey & Sedlacek, 1987; Morgan, 1990; Pennock-Roman, 1990), but only 9% of the variance among African Americans in White schools in eight studies (Goldman & Hewitt, 1976; Hedges & Majer, 1976; Wilson, 1980; 1981; Fleming & DuBois, 1981; Ramist, Angoff, Broudy, Burton, Donlon, Stern, & Thorne, 1984; Tracey & Sedlacek, 1987; Morgan, 1990). Similarly, test scores accounted for an average of only 5% of the variance in grades among Latino students in eight studies (Dittmar, 1974; Goldman & Richards, 1974; Lowman & Spuck, 1975; Goldman & Hewitt, 1976; Breland, 1978; Duran, 1986; Pennock-Roman, 1990; Morgan, 1990). Charges of bias also persist because of reports of lack of prediction (Dalton, 1976; Boyd, 1977), underprediction (Houston, 1983), and overprediction in minority students (Temp, 1971; Breland, 1978; Crouse & Trusheim, 1988). Nettles, Thoeny, & Gosman (1986) suggest that the marked tendency to overprediction indicates that events occur during the

college experiences of students that cause surprisingly lower performance levels than would be predicted. However, the nature of such events has not been specified.

Fleming (1990) found that when Black students enrolled in Black colleges were examined, their test scores accounted for an average of 21% of the variance in grades among Black students in four studies representing eighteen historically Black colleges, suggesting that the supportiveness of the college environment was also an issue in predictive validity rather than test bias itself or test bias alone. This hypothesis received further support when Fleming & Garcia (1994) found that average predictive validity was lowest for Black freshman males in eight White schools (i.e., a low 3.1% of the variance), but highest for Black freshman males in seven Black schools (i.e., a high 19% of the variance). For Black females, average predictive validity was actually higher in predominantly White schools (14%) than in Black schools (8%), suggesting that the stereotypically differential treatment of men and women is reflected in test score prediction. Thus, the pattern of SAT correlates may well be a barometer of college adjustment.

The approach to the present study was a correlational one, that is, it examined the correlates of SAT scores with an extensive battery of measures of academic and social adjustment. This analysis permits the examination of a pool of minority students in the three schools of engineering, with opportunities for examining sex, institutional, and ethnic differences. This study represents a small sample that might provide ungeneralizable results. Furthermore, any conclusions about the relationship between the SAT and grades need to be examined with larger samples within an institutional context. However, the results can be compared with the available studies of predictive validity and correlates of test scores with college adjustment that provide a framework for understanding the results. It is expected that the correlates of the test scores will reveal indications of Project Preserve students' adjustment status. Three hypotheses were generated in accordance with past research: (1) For students with a history of academic problems SAT scores will not correlate significantly with measures of academic performance during the first year of matriculation, with the variance in GPA accounted for by SAT scores falling well below the 12% variance estimates found for majority students; (2) SAT scores will correlate positively with three measures of cognitive skill; (3) SAT scores will correlate negatively with a measure of both social and academic adjustment to college; (4) SAT scores will correlate negatively with a measure of interactions with college and/or high-school teachers. No hypotheses were generated as to how test scores might correlate with measures of interactions with the

mother and father, or with measures of motivation, due to the absence of previous research. In short, the study hypothesized that test scores will correlate with measures of ability, but not with measures of performance resulting from negative patterns of adjustment.

Method

Participating Institutions

Students were transferred from previous engineering schools (all predominantly White), where they had failed, into schools participating in Project Preserve that were chosen for their diversity of institutional characteristics. Assignment of students was based on geographic location. Xavier University of Louisiana is a small, predominantly Black college with a national reputation for the production of science majors (Toch, 1990; Sevenair et al., 1987). California State University at Northridge (CSUN) is a large teaching-oriented institution, with a minority enrollment in engineering of over 25%, and with a record of supportive services to minorities, including a Minorities in Engineering Program (California Post-Secondary Commission, 1986). City College of New York (CCNY) is an urban institution with strong emphasis on research and graduate studies, with an award-winning support program for minorities in engineering (Pfeffer & Brown, 1990).

Subjects

From an initial pool of 79 engineering students for whom evaluation measures were available, SAT scores were available for 48. As shown in Table 1, 16 were from Xavier, 24 from CSUN, and 8 from CCNY, which does not require test scores. In terms of ethnicity, 39 (81%) were African American, 8 (17%) were Latino, and 1 (2%) was classified as Other (i.e., mixed). African American students constituted 100% of the Xavier sample, 63% of CSUN, and 100% of CCNY. In terms of sex, 31 (65%) were male, and 17 (35%) were female. With regard to social class, the mean socioeconomic status of father score, according to the Hamburger (1971) scale, was 3.28 on a 1–7 point scale with 1 indicating the highest SES. The mean SES of mother was 3.93.

There were no institutional or ethnic differences in test scores. However, male test scores were significantly higher than female scores (997 versus 896; $t = 2.37$; $p < 0.05$). Note, however, that there were no sex differences in academic performance. There were no sex, institutional, or ethnic differences in social class, but social class of fathers was significantly higher than social class of mothers ($t = 2.34$, $p < 0.05$). Furthermore, differences by ethnicity indicated that social class of mothers

TABLE 1

Mean and Range for SAT and SES Scores by School and Sex

	SAT	SES*	XAVIER		CSUN		CCNY	
			SAT	SES*	SAT	SES*	SAT	SES*
ALL:	961.0 (147.7) <i>n</i> = 48 670–1350	3.33 (1.26) <i>n</i> = 48 1–6	920.6 (113.4) <i>n</i> = 16 740–1120	3.08 (1.05) <i>n</i> = 16 1–5	985.0 (160.8) <i>n</i> = 24 670–1350	3.43 (1.52) <i>n</i> = 24 1–6	970.0 (167.7) <i>n</i> = 8 750–1190	3.53 (0.71) <i>n</i> = 8 2–4
MALE:	996.8 (154.2) <i>n</i> = 31 670–1350	3.28 (1.23) <i>n</i> = 31 1–5	943.6 (112.2) <i>n</i> = 11 790–1120	3.06 (1.20) <i>n</i> = 11 1–5	1036.0 (167.4) <i>n</i> = 15 670–1350	3.44 (1.40) <i>n</i> = 15 1–5	996.0 (187.7) <i>n</i> = 5 780–1190	3.32 (0.84) <i>n</i> = 5 2–4
FEMALE:	895.9 (111.18) <i>n</i> = 17 740–1060	3.40 (1.35) <i>n</i> = 17 1–6	870.0 (110.0) <i>n</i> = 5 740–1020	3.12 (0.76) <i>n</i> = 5 2–4	900.0 (110.9) <i>n</i> = 9 740–1060	3.40 (1.80) <i>n</i> = 9 1–6	926.7 (153.1) <i>n</i> = 3 750–1020	3.87 (0.23) <i>n</i> = 3 3.6–4

NOTE: Standard deviation in parentheses.

* Mean SES rating on 1–7 point scale where 1 is high (Hamburger, 1971); a mean of 3.6 was substituted for four missing cases.

was higher for African Americans than for Latinos (3.22 versus 6.13, $t = 4.96$, $p < 0.001$).

Measures

The following measures, adapted from research on minority student development in college (Fleming, 1984; Winter, McClelland, & Stewart, 1981), were administered as part of the standard evaluation of Project Preserve students:

Cognitive skills. (1) Concept Formation (Heidbreder, 1948), a measure of basic associative process skills, where the task is to link nonsense syllables with new versions of pictorial concepts. (2) Thematic Analysis (Winter & McClelland, 1978), a measure of comparative analytical ability, where the task is to compare two sets of stories in any way desired. (3) Analysis of Argument (Winter, McClelland & Stewart, 1981), a measure of intellectual flexibility, where the task is to argue against a controversial article on Dr. Spock and permissive child rearing, and then to defend it. Therefore the task requires arguing both for and against one's own beliefs.

Adjustment to college and motivation. (1) An adjustment to college questionnaire, adapted from Fleming (1984), including assessments of: (a) social adjustment; (b) academic adjustment; (c) interactions with college teachers; (d) interactions with high-school teachers; (e) interactions with the mother; (f) interactions with the father; (g) self-concept

items; (h) personal threat (adapted from Holmes & Rahe, 1967); (i) subjective perception of the best aspects, worst aspects, and influence of the *previous* college where they failed (Stewart, 1975); and (j) background information on aspirations, ethnicity, and social class (Hamburger, 1971).

(2) Thematic Apperception Test (TAT), consisting of five verbal cues and scaled for aggression in accordance with previous research indicating its diagnostic value in minorities (Fleming & DuBois, 1981). The cues were scored for: (a) need for Achievement (McClelland, Atkinson, Clark, & Lowell, 1992), a measure of concern for doing things well; (b) Fear of success (Horner & Fleming, 1992) a measure of concern for achievement conflicted by self-sabotaging tendencies; and (c) need for Power (Winter, 1992), a measure of concern for having impact on others.

(3) The Mandler & Sarason (1952) Test Anxiety Questionnaire (TAQ) as a measure of Fear of Failure.

(4) The Holland Vocational Interest Inventory (Holland, 1970; 1973), a measure of six vocational orientations: Investigative (scientific), Realistic (mechanical), Artistic, Social, Enterprising (business), and Conventional (clerical).

Grade point average was available for a maximum of 41 semester grades and 37 cumulative grades. Measures were administered in the order indicated, except that the TAT was given first.

Procedure

Project liaisons arranged for entering students to attend group testing sessions with the project evaluator, a Black female (JF). Groups ranged from 2 to 20 students per session, and the sessions were 2 1/2 hours. Testing sessions were usually conducted mid-semester. Test scores and grades were made available to the evaluator by the project liaison.

Treatment of Data

Twenty-nine percent of the standardized test scores were ACT scores, and the remainder were SAT scores. Thus, ACT scores were converted to SAT scores using a conversion formula given in Langston & Watkins (1976) and updated in Marco & Abdel-Fattah (1991). Test scores were then correlated with the remaining measures in the battery.

Cognitive skills were scored according to procedures described in Fleming (1984) and Fleming, Garcia, & Morning (1995). Scales were constructed from items in the college adjustment questionnaire to measure the following six dimensions: academic adjustment (measuring satisfaction with and commitment to academics), social adjustment (social

involvement), interactions with college teachers (nature and degree of constructive contact), interactions with high school-teachers, interactions with the mother, and interactions with the father. Items with scale correlations as well as alpha coefficients were consistent with standard levels. For measures of motivation, total scores were used as well as scores to individual TAT cues and items of the TAQ.

Test scores were correlated with the whole sample and then separately by sex, despite the small numbers, for the sake of thoroughness and in light of significant sex differences in the earlier literature. Although test scores were not correlated with social class in the whole sample, the findings were nonetheless controlled because the dependent variables might be related to SES. Partial correlations were then conducted using father's social class, with mean substitution for missing data ($n = 4$). An additional control for mother's social class was required for the female results, because their test scores were significantly correlated with this measure.

There are a number of concerns in using SAT scores to predict grades. First, Ramist, Lewis, & McCamley-Jenkins (1994) found that pooling course grades into a composite GPA with no control for comparability of courses diminished predictive validity. However, in their research this problem was minimized among African American students, who comprise 81% of the present sample. Furthermore, lack of course comparability should be less of a problem in the engineering curriculum, because it is heavily dominated by math and science courses, which typically yield the highest SAT validity coefficients. Second, SAT scores were pooled across institutions to perform correlations with grades and other measures because of the small number of students. Such a procedure can be problematic because of expected institutional variations in predictive validity and other school characteristics (cf. Willingham & Lewis, 1990). However, predictive validity coefficients are given separately for each school, and significant school differences in dependent variables are noted in the text. Third, note that no correction for restriction of range of test scores was employed, which may underestimate the size of the predictive validity coefficients.

Results

Predictive Validity of Standardized Test Scores

Table 2 presents correlation coefficients for SAT (or ACT) scores for first and second semester and cumulative grades of all Project Preserve students as well as a function of sex, ethnicity, and college. Due to larger numbers of subjects, the first semester grades are assumed to be the

TABLE 2

Predictive Validity of Standardized Test Scores in Project Preserve Minority Engineering Students

Group	1st Semester GPA	2nd Semester GPA	1st Semester Cumulative GPA	2nd Semester Cumulative GPA	Average
ALL STUDENTS:	0.242 (41) 5.8%	0.200 (34) 4.0%	0.289 (37) 8.3%	0.311 (31) 9.7%	0.261 6.8%
BY SEX:					
Males	0.209 (27) 4.4%	0.288 (22) 8.3%	0.207 (25) 4.3%	0.268 (19) 7.2%	0.243 5.9%
Females	0.283 (14) 7.9%	0.177 (12) 3.1%	0.514 (12) 26.4%	0.590* (12) 34.8%	0.391 15.3%
BY ETHNICITY:					
African American	0.281 (32) 7.8%	0.181 (26) 3.3%	0.370 (29) 13.7%	0.293 (25) 8.6%	0.281 7.8%
Latino	-0.049 (8) 0.2%	0.169 (7) 2.9%	-0.115 (7) 1.3%	0.363 (6) 13.2%	0.092 0.8%
BY SCHOOL:					
Xavier	0.533* (14) 28.4%	0.611* (13) 37.3%	0.533* (14) 28.4%	0.642* (13) 41.2%	0.580 33.6%
CSUN	0.163 (19) 2.7%	-0.033 (16) 0.11%	0.081 (18) 0.7%	0.120 (14) 1.4%	0.083 0.7%
CCNY	0.015 (8) 0.02%	0.347 (5) 12.0%	0.165 (5) 2.7%	0.143 (4) 2.0%	0.201 4.0%

NOTE: Number of subjects in parenthesis. Percentage of variance accounted for by test scores shown below number of subjects.

* $p < 0.05$.

most reliable and most relevant, because the correlation was produced in the project school, whereas cumulative grades include past performance. In most cases, the first semester correlations were similar to the average for all four correlations. In the aggregate, test scores produced a low correlation with semester grades of 0.242 (5.8% of the variance). The validity coefficient for females was higher than for males but still in the low range, i.e., 0.283 (7.9%) versus 0.209 (4.4%). Predictive validity for African American students was substantially higher than the low negative coefficient for Latino students: 0.281 (7.8%) versus -0.049 (0.2%). By school, only predictive validity for Xavier was in the high range (0.533; 28.4%), whereas the coefficients for both CSUN and CCNY were quite low: 0.163 (2.7%) and 0.015 (0.02%), respectively. Only the coefficients for Xavier were statistically significant.

Correlates of the SAT

Table 3 shows that standardized test scores were correlated with 14 variables suggesting a low achievement orientation. Of the three measures of cognitive skills, test scores correlated significantly only with Concept Formation ($r = 0.337, p < 0.05$), a measure of basic associative process skill, but not with two measures of higher-order critical thinking skills. Test scores were not significantly correlated with semester or cumulative GPA for the first semester in the program. Nor were there significant correlations with the measure of academic or social adjustment scales. However, two significant correlations were produced with items of the Academic Adjustment Scale: negatively with the importance of getting good grades ($r = -0.339, p < 0.05$); and negatively with the cramming index, i.e., the increase in studying during exams ($r = -0.310, p < 0.05$). Test scores were also uncorrelated with the Interactions with College Teachers Scale (ICT) and the Interactions with High School

TABLE 3

Correlates of SAT Controlling for SES for Project Preserve Students

Label	r $n = 48$	Controlling for SES $df = 45$
BACKGROUND:		
Sex: (1) male; (2) female	-0.330*	-0.328*
MOTIVATION/PERSONALITY:		
Achievement score to story 3	-0.323*	-0.306*
Social Vocational Interests	-0.355*	-0.343*
Total Test Anxiety Questionnaire	-0.355*	-0.339
FACULTY INTERACTION:		
Sought assistance in planning future in high school from faculty & staff	-0.341*	-0.327*
Sought course assistance in high school from faculty & staff	-0.396**	-0.390**
ACHIEVEMENT ORIENTATION:		
Highest degree planned	-0.354**	-0.357*
Importance of getting good grades	-0.339*	-0.332*
Cramming index: increase in study during exams	-0.310*	-0.310*
Plans business school	0.301*	0.315*
SOCIAL ORIENTATION:		
Best aspect is new people	-0.352*	-0.337*
Best of college is student involvement	0.331*	0.329*
Influence of college is identity formation	0.365*	0.354*
MATH/VERBAL PERFORMANCE:		
Concept Formation Total Score	0.337*	0.343*
VARIABLES NOT SURVIVING CONTROL FOR SES:		
Had informal contact with teachers outside class in high school	-0.310	ns

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Teachers Scale (IHST), but there were two negative correlations with items of the IHST Scale: seeking assistance from high-school teachers with courses ($r = -0.396, p < 0.01$); and seeking assistance from high-school teachers with planning the future ($r = -0.341, p < 0.05$). Test scores were correlated with two items from the College Climate Questionnaire assessing perception of the *previous* colleges, where students failed the first year: negatively with "the best of (the previous) college is new people" ($r = -0.337, p < 0.05$), and "the influence of (previous) college is identity formation" ($r = 0.354, p < 0.05$). Test scores were correlated with two measures of motivation: negatively with the Test Anxiety Questionnaire, conceived as a measure of fear of failure ($r = -0.339, p < 0.05$); and negatively with need for Achievement to story 3: A mother is about to punish her child again ($r = -0.306, p < 0.05$). In terms of aspirations, test scores were negatively correlated with the level of the terminal degree planned ($r = -0.357, p < 0.05$), positively with aspirations to attend business school ($r = 0.315, p < 0.05$), and negatively with Social Vocational Interests ($r = -0.343, p < 0.05$). Finally, test scores were correlated with sex, such that males achieved better test scores ($r = -0.328, p < 0.05$).

The low achievement orientation appears to have a developmental correlate in lower achievement motivation but also appears to be associated with low teacher contact, especially in high school. Indications of low test anxiety, high cognitive skill, and aspirations to business school suggest ability that has not been sufficiently nurtured by teachers or other mentors.

Correlates of the SAT in Project Preserve Males

In the 31 males with test scores, the SAT was correlated with eight variables indicating task competence but lack of interactions with high-school teachers (see table 4). Test scores were not correlated with any of the three measures of cognitive ability or with academic performance. Test scores were not correlated with scales measuring social or academic adjustment, but with one item of the Academic Adjustment Scale: having a career-related job ($r = 0.362, p < 0.05$). Test scores were not correlated with Interactions with High School or College Teachers Scales, but were correlated with two items of the IHST scale: negatively correlated with seeking course assistance from high-school teachers ($r = -0.407, p < 0.05$), and negatively with "had informal contact with high-school teachers outside of class" ($r = -0.353, p < 0.05$). Test scores were negatively correlated with "the best aspect of the *previous* college being new people" ($r = -0.456, p < 0.05$). In terms of motivation, test scores were not correlated with the Test Anxiety Questionnaire but were corre-

TABLE 4

Correlates of SAT Controlling for SES for Project Preserve Males

Variable	<i>r</i> <i>n</i> = 31	Controlling for SES <i>df</i> = 28
MOTIVATION/PERSONALITY:		
Need for Power total	-0.392*	-0.393*
(Do not) Worry before taking test (TAQ)	0.393*	0.392*
Performance on SAT not at all affected by feelings (TAQ)	0.443*	0.455*
Feel very confident before taking test (TAQ)	0.447*	0.447*
FACULTY INTERACTION:		
Sought course assistance in high school from faculty & staff	-0.407*	-0.408*
Had informal contact with high-school teachers outside class	-0.353*	-0.363*
ACHIEVEMENT ORIENTATION:		
Have job related to career	0.362*	0.363*
SOCIAL ORIENTATION:		
Best aspect is new people	-0.456*	-0.487*
VARIABLES NOT SURVIVING CONTROL FOR SES:		
Concept Formation Total	0.346*	ns
Plans career in medicine (not)	-0.409*	ns
Influence of college is coping and survival	-0.443*	ns

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

lated with three items from the TAQ, all suggesting test confidence: feeling confident before taking a test ($r = 0.447$, $p < 0.05$), not worrying before taking a test ($r = 0.393$, $p < 0.05$), and performance on the SAT not affected by feelings ($r = 0.443$, $p < 0.05$). Also, test scores were negatively related to need for Power ($r = -0.392$, $p < 0.05$).

In short, this list of correlates suggests test confidence and a career-related job on the positive side but a motivational profile and high-school adjustment that cannot be described as positive. Despite evidence of task competence and cognitive skill, minority males with higher SAT scores appear to suffer most from the lack of guidance and contact from teachers in high school. This apparent lack of mentoring may have contributed to their academic vulnerability.

Correlates of Test Scores in Project Preserve Females

After controlling for both father's and mother's social class (dictated by a first order correlation with mother's social class: $r = -0.587$, $p < 0.05$), test scores were significantly correlated with only four variables (see table 5). They suggest high self-esteem but less positive interactions with college teachers: negatively with described as passive ($r = -0.515$, $p < 0.05$); negatively with described as incompetent ($r = -0.493$, $p < 0.05$); negatively with the Interactions with College Teachers Scale ($r =$

TABLE 5
Correlates of SAT Controlling for SES for Project Preserve Females

Variable	<i>r</i> <i>n</i> = 17	Controlling for SES <i>df</i> = 14
BACKGROUND		
Wished for father to teach how to succeed	-0.526*	-0.515*
PERSONALITY/MOTIVATION:		
Described as passive	-0.515*	-0.719**
Described as incompetent	-0.493*	-0.543*
FACULTY INTERACTION:		
Interactions with college teachers scale	-0.583*	-0.643**
VARIABLES NOT SURVIVING CONTROL FOR SES:		
Campus person has been helpful (not)	-0.609**	ns
Cum GPA after second semester	0.590*	ns
Heartbeat accelerated while taking tests (not)	-0.532*	ns
Worry not at all while taking tests	0.504*	ns
Story length to story 3: punishing mother	-0.501*	ns
Extremely happy with college choice	0.496*	ns

NOTE: Corresponding correlations for significant variables controlling for SES of mother were: -0.682**, -0.513*, -0.695**, -0.561*.

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

-0.583, $p < 0.05$); and negatively with “wished for a father to teach how to succeed” ($r = -0.526$, $p < 0.05$). Test scores were significantly correlated with second semester cumulative GPA ($r = 0.590$, $p < 0.05$), but this finding did not survive the control for social class. In the case of females, it appears to be contact with college teachers that is the problematic factor, compared to high-school teachers for minority males. Note that an analysis of variance by school indicated that Interaction with College Teachers Scale scores were significantly higher (i.e., most positive) at predominantly Black Xavier University but lower at both CSUN and CCNY ($F = 4.208$, $p < 0.05$). Corresponding means were 42.8, 33.44, and 32.67.

Discussion

Given past research on test scores and on Project Preserve students, it was expected that an examination of correlates of test scores would shed light on issues of academic difficulty among minority engineering students. Indeed, the results suggest reasons why SAT scores may not predict grades as consistently among minority students, why academic failure is not a simple matter of preparedness, and the role that teachers or mentors play in the equation.

It was hypothesized that test scores would correlate significantly with measures of cognitive ability, but not with academic performance, which may be influenced by college adjustment, and negatively with measures of college adjustment itself. Also, given past research on Project Preserve students (Fleming, Garcia, & Morning, 1995), negative correlations between test scores and teacher interactions were expected. In broad outline, the hypotheses were confirmed, but there were important sex differences in the pattern of results.

On the most reliable measure of grade averages available, validity coefficients were indeed low, with test scores accounting for 5.8% of the variance in grades, compared to an average of 12% for majority students in the previous literature. For African American students, variance accounted for was 7.8% compared to the average of 9% in the previous literature. For Latino students, variance accounted for was -0.2% compared to the average of 5%. Predictive validity was higher for females than for males (7.9% and 4.4%, respectively), although both rates were low relative to previous research. When validity coefficients were examined by school, historically Black Xavier University students produced the only high coefficient, accounting for 28.4% of the variance in grades, compared to the average of 21% for students in Historically Black schools in past research. Thus, with the exception of Xavier University, the validity coefficients are so low as to suggest the presence of adjustment issues compromising the degree of predictive validity.

For all students, test scores were correlated with Concept Formation, one measure (of three) of cognitive ability measuring basic associative process skills. It is noteworthy that test scores were unrelated to two measures of higher-order cognitive skills. However, this pattern suggests that test score potential and basic cognitive ability do not translate well into academic performance. The question, then, is why not? Although Project Preserve students with higher test scores showed evidence of test confidence and stable study habits, there was also evidence of poor adjustment: a low achievement orientation associated with low teacher contact. A relative lack of contact with high-school teachers was linked to lack of interest in achieving good college grades or planning for advanced degrees.

Test scores were related to sex, with males having significantly higher test scores, which led to an examination of the correlates separately by sex. Among the 31 males in the sample, test scores were not significantly correlated with academic performance, nor were test scores correlated with any of the measures of cognitive ability. The remaining correlates suggested two trends among minority males: task competencies, but low power motivation that appears linked to low contact with high-

school teachers. Among the 17 females in the sample, few correlates survived controls for social class, but the strongest was negative (or less positive) interactions with college teachers as measured by the ICT Scale. Remaining correlates suggested that the higher the female student's self-concept, the less positive the interactions with college teachers. Thus, although both minority males and females with better test scores appear to experience difficulty in establishing positive contact with teachers, the problem appears earlier among males than females. Minority males with better verbal and analytical reasoning ability experience low teacher contact in high school, which is linked to a low achievement orientation. Minority females with better test scores do not appear to report less positive teacher contact until college, which may help account for the persistence of their significantly higher self-esteem. Although developmental relationships with parents were assessed, they did not figure prominently in the results.

These findings are consistent with the previous analyses of cognitive skills in this group of students, which showed that greater critical thinking abilities among minorities do not necessarily result in positive outcomes in education (Fleming, Garcia, & Morning, 1995). Better cognitive skills were associated with poor adjustment in college, including alienation and negative interactions with teachers, although there were institutional differences in that the findings were most pronounced in predominantly White schools with less faculty support. For SAT scores, fewer interactions with high-school teachers were observed for males, and less positive interactions with college teachers were observed for females, findings that are consistent with a series of studies showing the demotivating influence of teachers in interaction with minority students and that bright minority students experience the worst teacher treatment (Contrearras & Lee, 1990; Trujillo, 1986; Kahle & Lakes, 1983; Rubovits & Maehr, 1977). The lowest teacher-interaction ratings in the present study were found in the two predominantly White schools.

The results have a number of implications for SAT score validity, for bright minority students, and for retention efforts. First, the results suggest that low SAT validity coefficients are not necessarily evidence that the SAT is biased or invalid for minority students. Rather, validity coefficients appear to be low when adjustment to college is poor, so that test score potential does not translate properly into academic performance. In assessing test score validity, the psychological environment of minority students has so far been ignored as the potent factor it appears to be. Second, the results suggest that bright minority students (defined by higher SAT scores) may not receive the necessary nurturing from teachers and that this neglect contributes to their academic difficulty. Though

higher education is often concerned with helping academically under-prepared students, the benign neglect of minority talent has gone all but unnoticed. Third, the results provide an additional mission for retention efforts: designing strategies to ensure the nurturance of even the most able minority students. Although other research suggests the importance of strong support figures (Tracey & Sedlacek, 1987) and achievement-oriented study groups (Fullilove & Treisman, 1990), neither support staff nor bright minority students themselves may realize their vulnerable status. However, evidence that 50% of the correlates of higher SAT scores are either inauspicious or negative is cause for concern.

The effectiveness of support programs like Project Preserve may lie in providing what is necessary for academic development but not necessarily readily available to minority students. This analysis suggests that positive contact with teachers might help students translate demonstrated test score potential into academic performance. The Project Preserve approach did indeed include promotion of relationships with faculty as well as other means to encourage bonding. Although major theories of retention acknowledge the difficulty of minority students in achieving membership in the social system of college (Tinto, 1975), their more restricted interpersonal network (Fleming, 1984), and their ethnic isolation (Landis, 1991), the impact of teachers who fail to nurture brighter minority students has yet to be fully acknowledged.

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Review Essay

Higher Education in Canada: Different Systems, Different Perspectives, edited by Glen A. Jones.
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Globalization of curricula and other purviews of higher education has become a near mantra of recent years, a trend driven by forces as disparate as communication technologies, environmentalism, and the borderless economy. And yet, oddly, postsecondary policymakers and even scholars of higher education in the United States rarely look beyond the nation's borders, even to other English-speaking countries, when searching out relevant practices, experiences, and philosophies.

Those who would look to Canada for descriptive and comparative literature have until recently encountered a relative paucity of sources and hardly any current book-length treatments at all. This is largely because the study of higher education is an underdeveloped field within Canada's universities as compared to the United States, even when we proportion our expectations to Canada's smaller populations and fewer postsecondary institutions. According to an authoritative article of the early '90s (Skolnik, 1991), there have been only a handful of scholars and formal centers devoted to the study of higher education in Canada. The financial erosion suffered by most Canadian universities during this decade has hardly improved the situation.

Fortunately, a boomlet of publications has begun to address this deficiency. For example, John D. Dennison's *Challenge and Opportunity: Canada's Community Colleges at the Crossroads* (1995) is an excellent overview of the Canadian two-year and vocational sector and a worthy successor to 1986's *Canada's Community Colleges*. Cynthia Hardy's *The Politics of Collegiality* (1996) is a substantial contribution to the literatures of strategic planning and institutional culture, although it is based on mid-80s case studies. Peter C. Emberley's *Zero Tolerance: Hot*

Button Politics in Canada's Universities (1996) was roundly criticized for its sensational tone and haphazardly constructed recommendations, but the author clearly explicates many of the current political issues in Canadian higher education, and he writes from a sound grounding in and commitment to Western and Canadian traditions of the liberal arts. *Beyond Political Correctness: Toward the Inclusive University* (1995), an anthology edited by sociologists Stephen Richer and Lorna Weir, traces the development of PC and its backlash in Canadian universities and is a hearty rebuttal to conservative treatises on the subject.

Now joining this list of works is an overdue foundational study, *Higher Education in Canada: Different Systems, Different Perspectives*. As editor Glen A. Jones of the University of Toronto's Ontario Institute for Studies in Education (OISE) establishes in his brief introduction, the book is "an attempt to describe and analyze higher education in Canada using the provincial/territorial jurisdiction as the central unit of analysis" (p. ix). A chapter is devoted to each province and territory and its postsecondary system. An introductory chapter considers the role of the Canadian federal government in higher education; it is authored by David M. Cameron, who wrote the previous substantial effort to describe Canadian higher education in 1991. Michael L. Skolnik, also of OISE, provides a concluding synthesis and critique of the thirteen other essays in the book. *Higher Education in Canada* is the most recent release in the Garland Studies in Higher Education, for which Philip G. Altbach serves as general editor.

The chapters follow a common pattern. The history of each jurisdiction's higher education structure is presented, with more detailed attention given to developments after World War II. Descriptive statistics of enrollment and finance are heavily employed, and substantial attention is given to the missions and scope of higher education with regard to the policies and expectations of provincial governments. Particular emphasis is placed on the funding mechanisms and trends for higher education. Most authors attempt to assess the current, general success of higher education within the jurisdiction and to offer some brief comments upon the prospects and challenges of the near future.

Some chapters are worthy of particular note for their quality. Dennison's essay on British Columbia benefits from his established, general knowledge of higher education and its issues, his clear and engaging writing, and his willingness to balance praise for British Columbia's postsecondary accomplishments with frank acknowledgments of its unmet challenges, for example, less than optimum participation levels by citizens, particularly in outlying areas. Alexander D. Gregor's chapter on Manitoba explains as well as any other the uniquely Canadian re-

relationships among degree-granting universities and non-degree-granting colleges and the issues that ensue, including matters of sectarian rivalries, geographic competition, fiscal priorities, and transfer credit articulation. Jones's entry on Ontario tackles what is the largest and arguably the most decentralized of higher education sectors in the country and manages to make a coherent whole of it. Brian D. Christie offers a description of higher education in Nova Scotia through the convention of a dramatic play, detailing among other elements program notes, an overture, *dramatis personae*, and the reviews. It is a mechanism that could easily be strained and uncomfortable, but Christie accomplishes it well.

However, there are deficiencies. Cameron's chapter on the federal role in higher education focuses almost exclusively on the "schizophrenic" nature of funding from Ottawa, as if this were the only issue of national import in matters of postsecondary education. The multiple-author chapter on Alberta suffers from viewing higher education, its issues, and its development almost entirely from the perspective of formal, governmental reports and dictates. It is a recurrent perspective in the book. But fully three-quarters of the sources cited in the Alberta section are provincial ministry reports, recommendations, and statistical surveys; the narrative leans on them very heavily. The result is somewhat bloodless and narrow, and the effect is similar to what one might experience by considering the wonder of life on earth by reading reports from the Ministry of Agriculture.

Disappointing despite its descriptive merits is Janet G. Donald's essay on Quebec, an essay suffering from both boosterism and faint recognition of the broader, challenging contexts of higher education. She notes that Quebec has gone from the lowest to the highest postsecondary participation rate in Canada; upon this peg primarily hangs her conclusion that the province has "taken great strides to provide good education to its citizens" (p. 186). In fact, the majority of students in higher education in Quebec are at Cegeps (*collèges d'enseignement général et professionnel*), tuition-free "community" colleges that enroll students in their 12th and 13th year of education and a prerequisite to university admission. Students typically enroll for many years, receive few incentives from institutional policies to get good marks or complete studies, and graduate at low rates. A case can be made, and sometimes is, that enrollment at the Cegeps is strong because the Quebec economy is weak and unemployment high; that is, there is nowhere else for these students to go. It is further sometimes argued that these economic conditions are exacerbated by investment timidity evidenced by business in the face of the French separatist movement. This movement, the issue tail wagging the Canadian political dog for more than two decades, is worthy of some

note, even if to dismiss it as a factor influencing higher education, its direction, its funding, and federal policies. Donald writes of the separatist movement, “. . . and in September 1994 there was a change in government. Since that time, political upheaval has put educational concerns in the background” (p. 184). That is not an excerpt of the relevant discussion of francophone discontent and separatism, but the entirety of it as presented by any author in this book. This is comparable to discussing the state of higher education in the United States with claimed comprehensiveness without a mention of racial issues and divisions.

This downplaying of broad political contexts and issues is a general shortcoming of *Higher Education in Canada*, and one that results largely from the provincial sectoring of the discussions. For example, several authors note that within their own province, ministries once devoted solely to higher education have in recent years been subsumed under ministries of labor, economic development, or the like. The *Gestalt* of this as a national trend escapes explicit detection or note. Why do these ministry reconfigurations and the resultant policy directives on curricula and missions not raise concerns that liberal education itself is being demoted under short-term corporate and vocational needs? These are certainly neither new nor esoteric issues in the Canadian context. The 1951 Massey-Lévesque Commission decried the “neglect and distortion of the humanities” in Canada’s university (Emberley, 1996, p. 146). John Ralston Saul’s 1995 CBC Massey Lectures proposed that government and civic functionings in the West, including education, have been made wholly subservient to the pervasive, massive power and influence of corporatism. Saul’s book version of the lectures, *The Unconscious Civilization*, has at the writing of this review remained a full year and a half on top-ten lists of bestselling books in Canada. Yet as Skolnik notes in his wrap-up chapter, absent from *Higher Education in Canada* are any discussions of curriculum. Also missing, except in the briefest of notings, are any discussions of such current, important issues as faculty unionism and discontent, the central responsibility of the federal government in meeting the educational needs of aboriginal peoples; the status of women in the academy, the student-borne consequences of rapidly rising tuitions, the “brain drain” of faculty and students to the United States, and so on. Authors Jones, Skolnik, and Cameron, among others, are all equal to the tasks of such discussions and profitably could have contributed them here.

A criticism of this very review might be that it expects too much from a single book, and perhaps that is the case. Perhaps these criticisms are less appropriately channeled to a discussion of the limitations of *Higher Education in Canada* than they are to a call for more volumes by these

and other authors prepared to share the Canadian higher education experience with broader audiences. Americans and others can benefit from an understanding of Canadian higher education philosophies and experiences. As it stands, and despite limitations, *Higher Education in Canada: Different Systems, Different Perspectives* now constitutes the single, essential starting place for anyone who would seek to understand, appreciate, and learn from the realm of Canadian postsecondary education.

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Book Reviews

Working in the Middle: Strengthening Education and Training for the Mid-Skilled Labor Force, by W. Norton Grubb.
San Francisco: Jossey-Bass, 1996. 256+ pp. \$32.95

Learning to Work: The Case for Reintegrating Job Training and Education, by W. Norton Grubb. New York: Russell Sage Foundation, 1996. 122+ pp. \$29.95

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Norton Grubb, a prolific student of occupational education in the United States, provided us with two overlapping volumes in 1996. *Learning to Work* is an important and good read for both social scientists and those responsible for policy in postsecondary education principally because (1) its history of job training programs is concise and clear, (2) its review of the evaluations of those programs demonstrates how much we in higher education have to learn about rigor in evaluation design, and (3) its recommendations on project-based teaching and learning are fine guides for more generalized student-centered approaches.

In the current environment of systemic reform in education, school-to-work (STW) is very much part of the equation, but it is not well understood by those in the traditional higher education sector. STW has to be set against a background of three decades of experimentation with job training programs such as those under the Economic Opportunity Act, MDTA (Manpower Development and Training Act), WIN (Work Incentive program), CETA (Comprehensive Employment and Training Act), JTPA (Job Training Partnership Act), JOBS (Job Opportunities and Basic Skills Training), and others. Grubb sorts out this wilderness of acronyms using a wise strategy of focusing on program evaluation. In addition to learning just how minimally effective these programs were, we are reminded (if we ever knew them) of critical principles of evaluation design, such as selection effects, maturation effects, and regression to the mean (less a statistical notion than a behavioral one). Grubb points us toward the use of qualitative studies to sort out the effects of local variations (as well as to highlight the negative effects of small scale, poor instruction, and political influence) and underscores a distinction in outcomes criteria between labor force

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persistence and productivity that is often overlooked. Higher education reform efforts, particularly those targeted at disadvantaged students, should be subject to similar kinds of analysis, but they are not.

Ultimately and effectively, Grubb argues that the only way to help those who have been the targets of job training programs is to create a unified system of education and training "ladders" that integrate education with training at all stages. By "integration," Grubb means simultaneous, not alternating experiences. If programs being established under the School-to-Work Opportunities Act, particularly those involving community colleges, follow his designs, we could see some real results.

Two of the eight chapters of *Working in the Middle* cover much of the same territory, but in this volume, Grubb ties the topic more closely to higher education with very concrete cases that demonstrate just how integration of academic and occupational education can occur with maximum benefits in community colleges. Grubb is best when in the field, talking with faculty, students, and employers, telling us stories about programs, and when reflecting on public policy. But *Working in the Middle* requires some leaps of faith concerning its most central construct, the "sub-baccalaureate labor market," and the attendant data analyses do not wholly fill the gap. The combination is an alternately rewarding and difficult read.

Grubb defines "labor markets" in terms of the educational level of people who work in specific occupations, not in terms of the characteristics or demands of the occupations themselves. The definition is offered with neither the context of literature nor justification. *People* who hold at least a high-school diploma but less than a bachelor's degree, he says, constitute a "sub-baccalaureate labor market." Neither the Bureau of Labor Statistics nor the Census Bureau labels a "market" — a place where supply and demand manage to find each other — this way. Occupations change, fill with different content and skill requirements, and some of them don't sit still long enough to be measured. The distribution of individuals with different levels of education within occupations tells us something about those changes, but only indirectly.

Computer-related occupations, for a notable example, are anomalies in terms of formal educational attainment. Census data consistently show considerable proportions of programmers and operations research analysts with "sub-baccalaureate" education. Does that mean the knowledge and skill demands of those occupations are "sub-baccalaureate"? Not necessarily. The computer field has always honored competence, content, and creativity more than credentials and has presented a significant challenge to the putative structure of rewards in the intersection of education and labor market.

Grubb's central concept presents more than a semantic problem, because it is accompanied by a whirlwind of accompanying assertions, for example, that bank tellers "are more likely to be . . . high school drop-outs," that students leaving community colleges "generally find employment" in small firms, that local labor market information is "quite imprecise," and so forth. These assertions may be true, but Grubb offers no evidence that they are. This habit unfortunately carries over into his analysis of educational pathways, for example, a statement such as "The likelihood of a high school graduate enrolling in a four-year college is if anything *higher* in states that have large two-year college systems" (p. 65) is "supported" by reference to one of his own unpublished papers.

The data base on which he draws for this assertion was not designed for state-level analyses.

The rise or transformation of occupations one can call "mid-level" in terms of their educational and technical demands is a phenomenon one wishes had received more attention in the book, not the least because of its title. To understand the complexities and subtleties in these transformations, along with the changes in the organization and environment of work that undergird them, the reader would be better enlightened by Barley's (1992) analyses of the new artisanal crafts, Barley and Orr's (1997) edited collection of essays on the current status of technical occupations, and Cappelli et al.'s (1997) explication of the impacts of workplace changes.

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Attitude Change in College Students

Examining the Effect of College Peer Groups and Faculty Normative Groups

The link between reference group theory and the study of college students dates back to the initial development of the reference group concept. Though Hyman has been widely credited with first introducing the concept of reference groups in 1942, one of the most widely cited studies that illustrates the normative effect of reference groups is Newcomb's (1943) study of Bennington College women during the late 1930s. This pioneering study explains the observed change in political attitudes of women at Bennington as the function of their acceptance of and orientation to the college as a positive reference group (Newcomb, 1947). Follow-up studies of these women suggest that the changes attributed to the reference group are likely to persist over time (Newcomb, 1968; Alvin, Cohen, & Newcomb, 1991).

The idea of peer and/or reference group effects is a theoretical cornerstone of many of the studies of college impact beginning with Newcomb in 1943 and continuing in to the late 1960s. However, during the decade of the 1970s, this area of intellectual inquiry seems to have fallen from vogue in the study of higher education. Weidman's (1979) study of the impact of college on students' values is a notable exception. Using longitudinal student data and data gathered from faculty at the same institutions, these analyses examined the relative importance of student background characteristics, normative and interpersonal characteristics of college departments, and students' involvement in curricular and extracurricular activities in predicting changes in undergraduates' values. While the study findings confirmed the primary role played by students'

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background characteristics in studies of college impact, they also indicated that the normative environment created by faculty at the departmental level influences the values of students during their time in college (Weidman, 1979).

Beginning in the late 1980s and early 1990s (e.g., see Dey, 1988, 1991; Milem, 1992/1993, 1994), we see renewed interest in the study of peer and reference group effects. Astin's (1993) recent major work may signal the beginning of an era of revitalized interest in the study of the effects of peer groups on various student outcomes. One of the strengths of this new series of peer group studies is that they attempt to study peer and reference group effects through analyses of data collected at the multi-institutional level.

The goal of this study is to continue to enhance our understanding regarding the efficacy of peer groups and faculty reference groups in the socialization process of college students. It examines the relative impact of peer groups and faculty reference groups at the institutional level in changes in student attitudes and personal goal orientations across two related dimensions. Specifically, it examines changes in students' views regarding: (1) the belief that the wealthy should pay more taxes and (2) the personal importance of the goal of being very well off financially. These dependent variables were chosen because of the belief that each sits at opposing ends of two related continua that are of consequence in the study of college impact. The first continuum relates to the sociopolitical attitudes of students (Astin, 1993; Feldman & Newcomb, 1969; Pascarella & Terenzini, 1991). The first item represents a more "liberal" point of view, whereas the later item is characteristic of a more "conservative" viewpoint. The second continuum that is represented by these items involves the extent to which students have an orientation toward "others" as compared to an orientation toward "self" (Levine, 1980; Pascarella & Terenzini, 1991). The first item suggests a greater orientation toward others, whereas the second item indicates a greater orientation toward self. Hence, given the divergent relationship that these measures have with each other, the measures of the peer and faculty normative climates included in this study are expected to relate to each of these dependent variables in "opposite" ways.

Reference Groups and College Peer Group Effects

Students have mutual and reciprocal influence on each other. In the interaction they develop consensual and shared sets of expectations regarding each others' behavior and regarding important aspects of their common environment. These consensual and shared expectations – known as norms and stan-

dards – form the basis of the student peer group's power over individual members. (Feldman & Newcomb, 1969, p. 240)

Historically, social scientists have recognized the importance of the groups to which individuals belong in shaping the attitudes and behaviors of people. The term "reference group" refers to a group to which an individual orients him/herself, regardless of whether or not the individual is actually a member of the group (Singer, 1981). The development of the reference group concept drew attention to the idea that the attitudes and behaviors of an individual may be shaped by groups other than the individual's.

Kelley (1952) defines two distinct functions served by reference groups. The *comparative* function exists when the referents serve as standards of comparison for an appraisal of some sort; the *normative* function exists when the referents serve as a source of the individual's norms, attitudes, and/or values. Broadly conceived, the consequence of the normative influence of reference groups is conformity (Singer, 1981). In most cases, this relates to conformity in attitudes and behaviors. However, this conformity can also be used to understand other social processes including social mobility, acculturation, and, most important to the purposes of this study, changes in attitudes (Singer, 1981).

In the preface to *College Peer Groups*, Newcomb and Wilson (1966) describe what they believe to be the most important considerations when studying college impact. The most vital factor to be considered in determining the outcome in college impact studies is what they call *selection*. This term describes the characteristics that students possess at the time they enter college. The second factor to consider when assessing the impact of college on students relates to *peer influences*. The authors contend that students' attitudes are particularly susceptible to the influence of peers. Many of the attitudes of interest to those of us who study the effects of education are attitudes firmly rooted in group membership.

In a later volume coauthored by Newcomb, the influence of peers is further elucidated in regard to college impact (Feldman & Newcomb, 1969). An inherent assumption of this definition of college impact is the fact that colleges and universities should and do serve as agents of socialization for the larger society.

As socializing institutions, colleges and universities have the task of influencing students so that they leave the campus with improved or different knowledge, skills, attitudes, and values. Designated socializing agents (primarily the faculty) act on behalf of the organization to train, develop, modify, or in some way "act upon" the individuals (students) who enter it, in more or less formal ways. (pp. 227–228)

Although faculty may be the designated agents of socialization, students are believed to be principally responsible for much of the socialization that transpires (Feldman & Newcomb, 1969). More directly stated, "A student's most important teacher is another student" (Chickering, 1969, p. 253). These points are not meant to minimize the role that faculty play. Rather, they are made to suggest that the normative influence of faculty is frequently amplified or attenuated by the interaction students have with their peers.

In a follow-up to the work of Feldman and Newcomb, Pascarella and Terenzini (1991) provide an analysis of more recent research on college impact. They note that "the influence of peers may be as great or greater than that of faculty" (1991, p. 313). Pascarella and Terenzini find this to be even more likely when changes in student attitudes and values are considered. Though the authors point out that research findings suggest that there is a relationship between student-faculty contact and attitude and value change, the magnitude of this influence is not clear. The effect of student-faculty contact may vary based upon the subgroups to which students belong and to the types of faculty with which students interact. In addition, students who live on campus are likely to show greater change in their attitudes due to greater exposure to the effects of interaction with their peers and other aspects of the college environment.

Chickering acknowledges the importance of peer influence when he writes: "The evidence clearly indicates that friends, reference groups, and the general student culture clearly have an impact on student development" (1969, p. 269). He later asserts that "the force of friendships, reference groups, and the student culture is amplified as frequency and intensity of contacts increase" (Chickering, 1969, p. 278).

In order to assess fully the role of peer groups in the personal development of college students, it is important to determine under what conditions these groups function best. Newcomb (1966) describes four key conditions of peer group influence: (1) the *size* of the group, (2) the *homogeneity* of the group, (3) the *isolation* of the group, and (4) the *importance to individuals of group-supported attitudes*.

Newcomb argues that smaller groups tend to have stronger effects on attitudes. However, he does not discount the potential effect of larger groups, particularly when the smaller group is a part of the larger group. If the attitudes held by a smaller group are consistent with those of the larger group, then the two may combine for a rather potent effect. However, when the smaller group and its attitudes are in conflict with the larger group, the smaller group can often serve to insulate its members from the effect of the larger group norms. Hence, the relative isolation of a group from other groups having different views and attitudes serves to

strengthen the belief that the group's views are "right." This frequently allows the smaller group and its attitudes to remain intact. Generally speaking, groups that are more homogeneous in terms of age, sex, social class, and/or religious beliefs (racial/ethnic background could also be included here) contribute to effective peer group influence primarily because of the homogeneity of attitudes that tend to correspond with these characteristics. Simply put, people with similar backgrounds and similar experiences are more likely to share similar attitudes and ideas. Finally, the greater the importance to individuals in the group of the attitudes for which the group stands, the greater the solidarity of the group. Conversely, when identification by the individual shifts away from the group and its prevailing attitudes, the influence of the group is diminished.

Based upon the findings of the analyses of a recent national longitudinal study of undergraduates, Astin (1993) proposes his theory of peer group effects. Although Astin's theory appears more than two decades after the pioneering work of Newcomb and Wilson, Feldman and Newcomb, and Chickering, there are many similarities in the ideas proposed by Astin and those contained in the early writings on peer groups effects.

Astin's theory of peer group effects has psychological and sociological components. From the psychological perspective, peer groups are "a collection of individuals with whom the individual *identifies* and *affiliates* and from whom the individual seeks *acceptance* or *approval*" (Astin, 1993, p. 400). Astin defines identification as the recognition on the part of the individual that other people are like the individual in certain key respects. In this schema, identification and affiliation go hand in hand with the students' need for acceptance and approval.

From the sociological perspective Astin defines peer groups as "any group of individuals in which the members identify, affiliate with, and seek acceptance and approval from *each other*" (p. 401). Acceptance in the sociological perspective refers to the recognition by the group that individuals have a certain set of characteristics that qualify them for membership in the group as well as to the degree to which the individual's values and behaviors conform to the expectations of the other members of the group. Astin argues that "identification with, and especially the desire to seek acceptance and approval from, any group are both necessary conditions for that group to qualify as a peer group for that student" (p. 401).

Astin concludes the discussion of his theory of peer group effects by posing several testable hypotheses that he believes could be probed in future research:

- The peer groups having the greatest impact will be those with whom the individual most strongly identifies (this is an especially impor-

tant issue, given the very large number of possible peer groups that one finds in a single institution).

- The impact of the peer group will be proportional to the extent to which the individual seeks acceptance and approval from that group.
- The magnitude of any peer group effect will be proportional to the individual's frequency and intensity of affiliation or interaction with that group.
- Individual members of a peer group who exhibit beliefs and behaviors that are at variance with peer group norms will be more likely to leave that peer group than will students whose beliefs and behavior are consistent with peer group norms.
- Individual peer group members with deviant beliefs or behavior will be less likely to leave the peer group if they change their beliefs and/or behavior in the direction of group norms. (1993, p. 402)

Methodology and Data Source

Characteristics of the Sample

The data used in this study were collected by the Higher Education Research Institute (HERI) at UCLA as part of the Cooperative Institutional Research Program (CIRP) sponsored by the American Council on Education. The CIRP freshman survey annually collects a broad range of information on entering students that can later be used in longitudinal analyses of college impact. The data for these analyses came from the 1985 Student Information Form (SIF) that was administered to all freshmen at participating institutions, the 1989 Follow-up Survey of the entering class of 1985 (FUS), a 1989 National Survey of College and University Faculty conducted by HERI, and a variety of institutional information from federal government sources.

The sample used in this study included respondents to the FUS who attended institutions for which there was also faculty data. Students from institutions with fewer than 15 respondents to the FUS were excluded from the sample. This step was taken to insure that a student's individual score did not adversely effect the peer aggregate scores that were computed. In addition, an upper limit of no more than approximately 150 students per institution (or 1% of the total sample) was placed on the sample. This upper limit was used to insure that no single institution (i.e., large universities) would inappropriately influence the study findings due to the fact that this institution was represented in the sample. Based upon these specifications, the final sample included 159 institutions and approximately 15,150 students.

Conceptual and Methodological Considerations

The basic question of research on college impact first posed by Feldman and Newcomb (1969) is, Under what conditions do what kinds of students change in what ways? The "conditions" that Feldman and Newcomb describe are defined as the aspects of the college environment that affect a set of specific outcomes under investigation. Astin (1970a, 1970b) argues that these "conditions" or aspects of the college environment are critical because they provide the researcher with an "interpretive frame of reference" that can be used to explain the changes observed in outcome variables.

One of the major weaknesses of most of the early studies of college impact, including the majority of studies that dealt with peer effects, is that they do not necessarily measure impact. Instead, these studies may only measure change in students over time. Although there are observed changes in the populations studied, there is no way to assess whether the changes can be attributed to the college environment or simply to the process of maturation. This is true primarily for two reasons — both stem from the fact that these studies generally use samples of students from single institutions. The researchers have no way to control adequately for the entry characteristics of the students. This presents problems of self-selection, given that particular colleges tend to attract particular types of students. Even if there were controls for the input characteristics of the students involved, there is no way to generalize these findings to other campuses. In these single institution studies, because of the absence of data from multiple institutions, there is no way to determine whether the observed changes are unique to the particular campus being studied (see Astin, 1970a, 1970b, 1977).

Multivariate analyses were used in this study to examine the effects of student background or input characteristics, peer and faculty normative characteristics, and institutional characteristics on relative increases or decreases in two dependent variables assessing students' attitudes. Specifically, these include students' level of agreement with the opinion statement that: (1) "The wealthy should pay more taxes" and (2) the degree of importance of the personal goal of "Being very well off financially."

The conceptual framework and methodology utilized in this study are derived from a framework for understanding the undergraduate socialization process developed by Weidman (1989) and the methodological plan used in the college impact studies of Astin (1970a, 1970b, 1977, 1991, 1993). Weidman (1989) defines undergraduate socialization as "a process that results from the student's interaction with other members of the college community in groups or other settings characterized by varying degrees of normative pressure" (Weidman, 1989, p. 304). Weidman

is critical of much of the research on college impact, which he describes as being "intuitive" in nature. Although this "intuitive" approach is helpful in describing the types of effects that occur, in identifying the types of colleges where these effects are most likely to occur, and in discovering the types of students who are most likely to be affected by attending college, this approach does not "clarify and explain in any systematic fashion the reasons why effects occur" (Weidman, 1989, p. 293). Weidman argues that if our understanding of how college influences students is to be expanded, then research must pay more attention to "identifying and operationalizing the specific social and interpersonal mechanisms that transmit and mediate the influences of the college environment" (Weidman, 1989, p. 293). Weidman's (1989) framework provides for consideration of the three main components he considers to be important in studying undergraduate socialization: (1) student background characteristics, (2) the influences of the academic and social structure of the college, and (3) the impact of parental socialization and noncollege reference groups in the socialization of students.

Astin's Input-Environment-Output (I-E-O) model provides a means for assessing the impact of different college environments in the absence of a true experimental design (1970a, 1970b, 1977, 1991, 1993). It is essentially impossible to design an experimental study of college impact given that students do not distribute themselves randomly to all different types of institutions available to them. This makes it extremely difficult to control for the entering characteristics of students included in a study. Essentially, Astin's model is centered around the idea that "the college can be seen as comprising three conceptually different components: *student outputs*, *student inputs*, and the *college environment*" (Astin, 1970a, p. 224). *Student inputs* are those characteristics students have when they first enter college. The *college environment* describes those aspects of colleges and universities that are capable of influencing students. *Student outputs* are those elements of students' development that the college either influences or hopes to influence (Astin, 1970a).

The I-E-O model of studying college impact provides for control of input characteristics and for measuring the effects of a host of environmental variables (see Astin, 1970a, 1970b, 1977, 1991). Astin uses stepwise multiple regression techniques as the statistical method of analysis in his model. The effects of input characteristics are controlled for by entering the variables in blocks in temporal sequence to approximate the order in which they are believed to have occurred. Environmental variables enter the equation after all relevant input characteristics that are related to the outcome have been allowed to enter the regression equation.

The analyses in this study were done by combining sets of indepen-

dent variables into five groups (or blocks) representing different conceptual components of Astin's model and then entering them in a blocked hierarchical regression procedure. Whereas Astin's use of a stepwise procedure is helpful in seeking to gain a broad understanding of the multiple relationships among variables in a regression equation, blocked hierarchical regression is a more appropriate method of analysis when a researcher seeks to test the relationships among variables in a more systematic way that is informed by theory.

Factor Analyses

The aspects of the college experience central to the questions raised in this study involve the peer normative environment and the normative environment created by faculty at the various institutions in the sample. A series of exploratory factor analyses were undertaken to determine whether factor constructs would emerge that could be used to characterize these normative environments. The factor analyses were performed using all entering student responses to personal goal items and opinion items from the 1985 SIF. Responses from all freshmen who completed the survey at each institution were used so as to better approximate measures of the peer normative environment at the institutions represented in the sample.

Factors were extracted using the principal axis factoring method. The extracted factor matrix was rotated both orthogonally and obliquely. After a number of rotations of the extracted factor matrix, a six-factor solution emerged as the most descriptive and parsimonious for this study. Orthogonal and oblique rotation methods yielded the same factor solution. The peer normative constructs identified through the factor analysis were: (1) Humanism, (2) Materialism, (3) Social Liberalism, (4) Libertarianism, (5) Authoritarianism, and (6) Artistic Orientation. Items comprising the peer normative factors, their loadings, and reliability estimates for the factor scales are presented in Table 1.

Peer normative environments represented by the label Humanism are characterized by students who tend to be more altruistic in their orientations. They value participation in programs and activities designed to help others as well as have a desire to influence social values and the political structure. Environments represented by the label of Materialism are characterized by students who are more concerned with issues relating to money and status. Peer normative environments with the label of Social Liberalism are represented by students who express a desire for programs and activities designed to make society more equitable and just. Normative environments represented by the label of Libertarianism are characterized by students who tend to be supportive of the rights of individual self-expression and choice. Environments with the label of Authoritarianism are

TABLE 1
College Peer Group Types

Factors	Factor Loading
<i>Factor 1 — Humanism</i>	
Goal: Participate in community action program	0.63
Goal: Promote racial understanding	0.59
Goal: Influence social values	0.54
Goal: Influence political structure	0.51
Goal: Develop meaningful philosophy of life	0.50
Goal: Be involved in environmental clean-up	0.48
Goal: Help others in difficulty	0.47
Alpha estimate for scale = 0.77	
<i>Factor 2 — Materialism</i>	
Goal: Be well off financially	0.68
Goal: Have administrative responsibility for others	0.57
Goal: Be successful in own business	0.54
Goal: Be expert in finance/commerce	0.50
Goal: Obtain recognition from colleagues	0.50
Goal: Become authority in own field	0.47
View: College increases earning power	0.42
Alpha estimate for scale = 0.73	
<i>Factor 3 — Social Liberalism</i>	
View: Government not doing enough to promote disarmament	0.69
View: Government not doing enough to control pollution	0.46
View: Increase federal military spending	-0.44
View: Nuclear disarmament is attainable	0.41
View: Government not doing enough to protect consumer	0.40
View: National health care plan needed	0.38
View: Government should discourage energy use	0.35
View: Wealthy should pay more taxes	0.32
View: Death penalty should be abolished	0.28
View: Busing is ok to achieve racial balance in the schools	0.27
Alpha estimate for scale = 0.66	
<i>Factor 4 — Libertarianism</i>	
View: It is alright to live together out of marriage	0.66
View: Abortion should be legalized	0.60
View: Marijuana should be legalized	0.47
Alpha estimate for scale = 0.64	
<i>Factor 5 — Authoritarianism</i>	
View: Prohibit homosexual relations	0.51
View: Married women are best at home	0.46
View: Colleges ban extreme speakers	0.40
View: Equal opportunity for women	-0.35
View: Colleges have right to regulate off-campus behavior	0.33
Alpha estimate for scale = 0.52	
<i>Factor 6 — Artistic Orientation</i>	
Goal: Create original works	0.62
Goal: Write original works	0.58
Goal: Achieve in the performing arts	0.47
Alpha estimate for scale = 0.62	

SOURCE: 1985 Survey of Entering Freshmen, Cooperative Institutional Research Program, Higher Education Research Institute, UCLA

characterized by students who are very conservative in their views toward women, homosexuality, and individual behavior. Finally, normative environments characterized by the label of Artistic Orientation tend to have students who value the goals of making artistic and literary contributions.

Another factor analysis was undertaken using similar personal goal and opinion items from the 1989 survey of faculty. The factor extraction and rotation methods used with the student data were also used with the faculty data. After a number of rotations of the extracted factor matrix, a five-factor solution was selected and included: (1) Humanism, (2) Social Liberalism, (3) Careerism, (4) Activism, and (5) Materialism. Items comprising the faculty normative factors, their loadings, and the reliability estimates for the factor scales are presented in Table 2.

TABLE 2
Faculty Normative Group Types

Factors	Factor Loading
<i>Factor 1 — Humanism</i>	
Goal: Promote racial understanding	0.70
Goal: Help others in difficulty	0.65
Goal: Develop meaningful philosophy of life	0.56
Goal: Be involved in environmental clean-up	0.49
Alpha estimate for scale = 0.71	
<i>Factor 2 — Social Liberalism</i>	
Opinion: National health care plan needed	0.65
Opinion: Wealthy should pay more taxes	0.52
Opinion: Abortion should be legalized	0.50
Opinion: Death penalty should be abolished	0.49
Opinion: Colleges should be active in solving social problems	0.36
Opinion: Faculty unionization has enhanced teaching	0.35
Opinion: Colleges ban extreme speakers	-0.35
Opinion: Racial discrimination still a problem in America	0.30
Alpha estimate for scale = 0.68	
<i>Factor 3 — Careerism</i>	
Goal: Obtain recognition from my colleagues	0.72
Goal: Become authority in my own field	0.54
Alpha estimate for scale = 0.64	
<i>Factor 4 — Activism</i>	
Goal: Influence political structure	0.52
Goal: Influence social structure	0.69
Alpha estimate for scale = 0.72	
<i>Factor 5 — Materialism</i>	
Opinion: College increases earning power	0.58
Goal: Be well-off financially	0.45
Goal: Have administrative responsibility for others	0.29
Alpha estimate for scale = 0.46	

SOURCE: 1989 Survey of College and University Faculty, Higher Education Research Institute, UCLA

The faculty normative factors representing Humanism, Social Liberalism, and Materialism are similar in meaning to those peer normative factors with the same labels described above. Faculty normative environments with the label of Careerism are characterized by faculty who have greater concern with obtaining recognition from their colleagues and with being recognized as authorities in their respective fields. Faculty normative environments with the label of Activism are characterized by faculty who value the goals of influencing the political structure and social values. Although these two items loaded on the student peer factor of Humanism, they clearly emerge as a distinct and different factor in the analysis of faculty data.

Aggregate measures (institutional means) for each factor were computed at the institutional level and merged with the data base. The peer aggregate measures were computed using all students who completed a freshmen survey (SIF) at the institutions contained in the sample. This was done so that a more accurate measure of the peer normative environment could be computed and included in the survey. The faculty aggregate measures were computed for all faculty who reported that they had taught undergraduate courses at the institution in the year prior to completing the survey. Faculty who were involved in activities that excluded them from classroom contact with undergraduates (i.e., exclusively administrative responsibilities, exclusively research) were not used to compute the faculty normative aggregates. In addition to the peer factors and the faculty factors described above, aggregate measures of the mean political view of the students' peer group at each institution were created and included in this group of variables. Aggregate measures of the political view of faculty at each institution were also included.

Results of the Regression Analyses

Entry characteristics were separated into two distinct blocks of variables. The first block of variables included measures of the background characteristics of students at the time that they were born. The second block of background characteristics included measures of variables that were in place prior to the time that students entered college. Controlling for the effects of this group of variables at the first stage of the analyses serves two purposes. First, these variables help to determine the relationship between the entering characteristics of students and both of the outcome measures. Second, by first controlling for the entering characteristics of students we are able to provide controls for the nonrandom distribution of students within different college environments. Without a means for providing these controls, incorrect conclusions regarding the

effects of college environments might be drawn (Feldman & Newcomb, 1969; Astin, 1970a, 1970b, 1977, 1991, 1993).

Variables in the first block include dichotomous variables measuring sex (female = 2, male = 1) and race. Dummy variables of race were computed for African Americans, American Indians, Asian Americans, Chicano/Mexican Americans, Puerto Ricans, and Whites.¹

The second block of entry characteristics include measures of socioeconomic status (parental income and parental education), past academic achievement (high-school grade point average), educational aspirations, and a variety of attitude and opinion items (political view, individual scores on the peer normative measures,² and the pretest for the dependent variable).

Block three variables include measures of the living arrangements of students during their first year of college. Given the many positive benefits that living on campus has for students (Astin, 1977, 1993; Feldman & Newcomb, 1969; Pascarella & Terenzini, 1991), it is important to include variables that enable us to control for the variety of living options that are available to students.

The fourth block of variables includes the variables of key interest in this study. These are the factors described earlier that represent dimensions of the peer group environment and the normative environment created by faculty at each institution in the sample. Peer normative factors representing Social Liberalism, Authoritarianism, Materialism, Humanism, Artistic Orientation, and Libertarianism are included in this block. (Items comprising each factor and the factor loadings are presented in Table 1.) Faculty normative factors include Humanism, Social Liberalism, Careerism, Activism, and Materialism. (Individual items and their factor loadings can be found in Table 2.) These variables precede the characteristics of institutions included in block five because they are argued to be more *proximal* in nature (Jessor, 1981).

The fifth block of variables includes measures of the institutional or structural characteristics of the colleges and universities in the sample (e.g., selectivity, institutional type, institutional control, size). Earlier research on student development has shown that these characteristics can effect a variety of student outcomes (Astin, 1977, 1993; Feldman & Newcomb, 1969; and Pascarella & Terenzini, 1991). Findings based upon differences in institutional type have often been used to infer peer group effects. However, Jessor (1981) would argue that these characteristics of college environments are more *distal* in nature, thereby being of less relative significance to the student when compared to aspects of the peer group and faculty normative environment. Hence, they are placed after the peer and faculty normative measures in these analyses. This

study sought to determine whether or not institutional characteristics would be significant predictors of both dependent variables after first controlling for the effects of measures of the normative environments created by peers and faculty at these institutions.

Equation Predicting Students' Attitudes Toward Higher Taxes for the Wealthy

In total, forty-five variables were entered into the regression analysis. For a summary of results, please see Table 3. The final model explains nearly 22% of the variance in the dependent variable ($R^2 = 0.2174$).

Entry Characteristics

We do not see much of a relationship between the variables in the first block of the regression and the dependent variable. In fact, the first block of independent variables explains less than 1% of the variance in the dependent variable. There is a weak positive relationship between being female and being African American and agreement with the dependent variable. However, at the final solution of the regression equation, only being African American ($\beta = 0.04$) is significantly related to the dependent variable.

However, as we would expect, many of the independent variables included in the second block of student background characteristics serve as significant predictors of the dependent variable. There is a strong relationship between student's attitudes toward this statement in 1985 and their subsequent view in 1989 ($\beta = 0.35$ at entry and after block five). In another finding that we might expect, students who reported that they were more politically liberal at the time that they entered college are more likely to offer support for this statement four years later ($\beta = 0.07$ at entry and 0.06 after block five). Also, measures of individual student's scores on many of the peer factors are also predictive of the dependent variable. Students who were more materialistic in their views at the time that they entered college ($\beta = -0.08$ at entry and -0.07 after block five) were less likely to support the dependent variable four years later, whereas students who were more socially liberal ($\beta = 0.09$ at entry and 0.08 after block five) and/or humanist ($\beta = 0.03$ at entry and after block five) were more likely to endorse the dependent variable after four years. Students from families from higher socioeconomic backgrounds — those with higher reported income and with fathers with higher levels of educational achievement — were less likely to endorse the idea that the wealthy should pay more taxes four years after entering college ($\beta = -0.07$ for income and $\beta = -0.03$ for father's education at entry and after block five).

TABLE 3

View 8910: Wealthy Should Pay More Taxes

Variable	Simple r	Block 1	Block 2	Block 3	Block 4	Block 5
Sex: Female	0.03	0.02*	-0.01	-0.01	-0.01	-0.01
Race: American Indian	0.02	0.02	0.01	0.01	0.01	0.01
Race: Asian American	0.02	0.01	0.01	0.01	0.01	0.00
Race: Chicano/Mexican American	0.01	0.01	0.00	0.00	0.00	0.00
Race: Black/African American	0.07	0.06**	0.03*	0.03*	0.04**	0.04*
Race: Puerto Rican American	0.01	0.00	-0.00	-0.00	-0.00	-0.00
Race: White	-0.06	-0.01	-0.01	-0.01	-0.02	-0.01
Pretest: 1985 view	0.42		0.35**	0.35**	0.35**	0.35**
Father's education	-0.07		-0.03*	-0.03*	-0.03*	-0.03*
Mother's education	-0.03		0.01	0.01	0.01	0.01
Parental income	-0.18		-0.07**	-0.07**	-0.07**	-0.07**
High-school GPA	0.05		0.04**	0.04**	0.04**	0.04**
Degree aspiration	0.01		-0.00	-0.00	-0.00	-0.00
Individual score: Artistic Inclination	0.06		0.02	0.02	0.02	0.02
Individual score: Authoritarianism	0.04		-0.00	-0.00	-0.00	-0.00
Individual score: Humanism	0.09		0.03**	0.03**	0.03**	0.03**
Individual score: Libertarianism	0.03		0.02	0.02	0.01	0.01
Individual score: Materialism	-0.12		-0.08**	-0.08**	-0.07**	-0.07**
Individual score: Social Liberalism	-0.22		0.09**	0.09**	0.08**	0.08**
Political view 1985: Liberal	0.17		0.07**	0.07**	0.06**	0.06**
Lived at home	0.03			0.02	0.02	0.02
Lived in private residence	-0.02			-0.01	-0.01	-0.01
Lived on campus	-0.02			-0.01	-0.01	-0.01
Faculty Activism	0.03				0.02	0.02
Faculty Careerism	-0.03				-0.01	-0.02
Faculty Humanism	0.02				-0.02	-0.02
Faculty Materialism	-0.02				0.00	-0.00
Faculty Political Liberalism	0.04				-0.02	-0.01
Faculty Social Liberalism	0.05				0.03	0.02
Student Artistic Inclination	0.06				-0.01	0.00
Student Authoritarianism	-0.04				0.02	0.01
Student Humanism	0.06				-0.03	-0.03
Student Libertarianism	0.03				-0.00	-0.00
Student Materialism	-0.08				-0.06**	-0.05*
Student Political Liberalism	0.11				0.01	-0.01
Student Social Liberalism	0.13				0.05	0.06*
Historically Black college	0.04					0.00
Institutional selectivity	0.01					0.01
Men's college	0.01					0.01
Private four-year college	0.03					0.02
Private university	-0.06					0.00
Public four-year college	0.03					0.02
Public university	0.00					0.04
Size	-0.04					-0.01
Women's college	0.01					0.00
R ²		0.0064**	0.2116**	0.2121**	0.2166**	0.2174**
R ² change		0.0064**	0.2052**	0.0005	0.0045**	0.0008

NOTE: * $p \leq 0.01$. ** $p \leq 0.001$.

Finally, students who had shown higher levels of academic achievement while in high school were more likely to endorse this statement four years after entering college ($\beta = 0.04$ at entry and after block five).

Campus Living Arrangements

None of the three measures of living arrangements of students during their first year of college were significant predictors of the dependent variable. Based upon the findings of many of the earlier studies of college impact that establish the important educational benefits of living on campus for students, these findings are somewhat surprising and unexpected. This may have to do with the fact that these variables indicate student living arrangements only during the first year of college. If the variables had measured living arrangements during each of the four years, it is possible that this pattern of findings might have been different.

Peer Group and Faculty Normative Measures

Although there are statistically significant relationships between many of the peer group and faculty normative measures and the dependent variable, the beta weights for these variables drop dramatically after we control for the individual views of students at the time that they enter college. As we know, students do not randomly distribute themselves to different college environments. There are various reasons why students choose an institution. Among the reasons influencing many students' choice of institution is the expectation that they will be able to meet and interact with people who are like them. Hence, students tend to enroll at institutions with peers who tend to think in the way that they do. This can make it difficult for us to determine the extent to which peer groups influence the views of students.

Given these considerations we find that two of the peer normative measures serve as statistically significant predictors of the dependent variable at the final solution of the regression equation in expected ways. Students who attended institutions that are characterized by peer groups that are more materialistic in their orientation were less likely to endorse the viewpoint that the wealthy should pay more taxes four years after first entering college ($\beta = -0.05$). Conversely, students who attended institutions with peers who are characterized as being more socially liberal in their viewpoints were more likely to support this viewpoint four years after they first entered college ($\beta = 0.06$).

As we would expect, students who attended institutions where their peers exhibited higher levels of Materialism were less likely to endorse this belief four years after entering college. As you will recall from the

earlier discussion of factor types, this type of peer environment is characterized by students who place greater relative value on goals and views related to materialism and status. We would expect that students who have been surrounded by these normative messages during college would be less likely to endorse the view that the wealthy should pay more taxes. On the other hand, peer environments with higher levels of Social Liberalism were characterized as having students who are likely to advocate a more active role of the federal government in efforts to promote social and environmental issues. As we can see, students' views on this item in 1985 load on this peer factor. Hence, four years after entering college, we would expect that students who have attended colleges with more socially liberal peers would be more likely to support a more prominent role for the wealthy in providing tax revenues.

The block of variables containing the measures of peer and faculty normative environments helps explain 0.45% of the variance. Although this is not a particularly large amount of explained variance, it is statistically significant ($p \leq 0.001$) and accounts for a little more than 2% of the explained variance in this equation. Further, the peer and faculty normative environmental measures account for more of the explained variance than do either of the other blocks containing measures of the college experience. Neither the block of variables describing the living arrangements of students during their first year of college nor the block of variables containing measures of institutional type produces a significant change in the R^2 in this equation.

Institutional Characteristics

Although there were a few weak relationships between the structural characteristics of institutions and the dependent variable in the early stages of the regression equation, after the effects of all other variables had been controlled for in the regression, the beta weights for these institutional characteristics had become statistically non-significant. This suggests that these measures may have served as proxies for peer and normative measures in previous studies of college student socialization that did not include direct measures of these constructs.

Equation Predicting Importance of Goal of Being Very Well Off Financially

As with the previous regression equation, 45 variables were entered in five blocks as predictors of the dependent variable. The final solution explains almost 28% of variance in the dependent variable ($R^2 = 0.2782$). For a summary of results, please see Table 4.

TABLE 4
Goal 8908: Be Well Off Financially

Variable	Simple r	Block 1	Block 2	Block 3	Block 4	Block 5
Sex: Female	-0.07	-0.08**	0.00	0.00	0.00	0.00
Race: American Indian	0.00	-0.01	-0.01	-0.01	-0.01	-0.01
Race: Asian American	0.03	0.01	0.01	0.01	0.02	0.02
Race: Chicano/Mexican American	0.03	0.02	0.01	0.01	0.01	0.01
Race: Black/African American	0.12	0.09**	0.04**	0.05**	0.04*	0.05**
Race: Puerto Rican American	0.02	0.01	0.01	0.01	0.01	0.01
Race: White	-0.12	-0.05*	-0.03	-0.03	-0.03	-0.03
Pretest: 1985 view	0.47		0.32**	0.32**	0.32**	0.32**
Father's education	-0.09		-0.04**	-0.04**	-0.03**	-0.03**
Mother's education	-0.07		-0.01	-0.01	-0.01	-0.01
Parental income	0.02		0.03**	0.03**	0.03**	0.03**
High-school GPA	-0.16		-0.08**	-0.08**	-0.07**	-0.07**
Degree aspiration	-0.05		-0.01	-0.01	-0.00	-0.01
Individual score: Artistic inclination	-0.08		-0.03**	-0.03**	-0.03**	-0.03**
Individual score: Authoritarianism	-0.04		-0.00	-0.00	-0.00	-0.00
Individual score: Humanism	-0.06		-0.08**	-0.08**	-0.07**	-0.07**
Individual score: Libertarianism	0.09		0.04**	0.04**	0.04**	0.04**
Individual score: Materialism	0.38		0.19**	0.19**	0.18**	0.17**
Individual score: Social Liberalism	-0.12		-0.04**	-0.04**	-0.03**	-0.03**
Political view 1985: Liberal	-0.07		-0.02*	-0.02*	-0.02*	-0.02*
Lived at home	0.06			-0.03	-0.04	-0.04
Lived in private residence	0.01			-0.02	-0.02	-0.02
Lived on campus	-0.08			-0.05*	-0.05**	-0.05*
Faculty Activism	-0.00				-0.01	-0.01
Faculty Careerism	0.04				-0.02	-0.00
Faculty Humanism	0.01				-0.01	0.00
Faculty Materialism	0.17				0.02	0.03
Faculty Political Liberalism	-0.04				-0.00	0.00
Faculty Social Liberalism	0.02				-0.01	-0.00
Student Artistic Inclination	-0.10				-0.01	-0.02
Student Authoritarianism	0.07				-0.01	0.03
Student Humanism	-0.08				-0.01	0.01
Student Libertarianism	0.03				0.02	0.04
Student Materialism	0.25				0.08**	0.06**
Student Political Liberalism	-0.04				0.01	0.02
Student Social Liberalism	-0.07				-0.01	-0.01
Historically Black college	0.10					-0.04*
Institutional selectivity	-0.13					-0.01
Men's college	0.04					-0.00
Private four-year college	0.06					0.03
Private university	0.01					0.01
Public four-year college	-0.04					-0.00
Public university	0.03					-0.04
Size	0.09					0.04*
Women's college	0.00					0.02
R ²		0.0232**	0.2700**	0.2702**	0.2768**	0.2782**
R ² change		0.0232**	0.2464**	0.0006*	0.0067**	0.0013*

NOTE: * $p \leq 0.01$. ** $p \leq 0.001$.

Entry Characteristics

After all variables had entered the first block of the regression equation, only three of the initial background characteristics served as statistically significant predictors of the outcome. Women ($\beta = -0.08$) and white students ($\beta = -0.05$) were less likely to endorse this goal, whereas African American students were likely to place greater relative importance in the goal of being very well off financially ($\beta = 0.09$). By the end of the regression equation, only being African American remained as a statistically significant predictor of this goal ($\beta = 0.05$).

As with the previous regression equation, the second block of entry characteristics explains the most variance in predicting the dependent variable. As we would expect, the importance of this goal to the students at the time that they first entered college in 1985 is the best predictor of subsequent support for this goal ($\beta = 0.32$ at entry and after block five). We see contradictory findings with two variables that are used as indicators of the socioeconomic background of students. Students from families with higher levels of reported income ($\beta = 0.03$ at entry and after block five) were more likely to endorse this goal after four years, whereas students whose fathers had higher levels of educational attainment were less likely to support the goal ($\beta = -0.04$ at entry and -0.03 after block five). Two of the individual student scores on the peer measures serve as significant positive predictors of the dependent variable, whereas three of these measures serve as negative predictors. Students characterized as being more materialistic ($\beta = 0.19$ at entry and $\beta = 0.17$ after block five) and more libertarian in their views ($\beta = 0.04$ at entry and after block five) at the time that they entered college were more likely to endorse this goal four years later. Conversely, students who were characterized as being more artistically oriented ($\beta = -0.03$ at entry and after block five), more socially liberal in their views ($\beta = -0.04$ at entry and $\beta = -0.03$ after block five), and more humanistic ($\beta = -0.08$ at entry and $\beta = -0.07$ after block five) were less likely to endorse this view four years after entering college. Finally, students with higher high-school grade point averages ($\beta = -0.08$ at entry and -0.07 after block five) and students more liberal in their political views at the time they entered college ($\beta = -0.02$ at entry and after block five) were likely to place less relative importance in the goal of being very well off financially in 1989.

Campus Living Arrangements

In this regression equation, living on campus during the first year of college served as a significant negative predictor ($\beta = -0.05$ at entry and after block five) of the dependent variable. Neither of the other variables

measuring living arrangements during the first year of college served as predictors of the outcome. In this regression we see weak evidence suggesting that students who lived on campus during their first year of college were less likely to endorse this goal four years after entering college. This may indicate that students' views of the benefits of college are expanded as a result of their experience living on campus, where they are in a position to take advantage of the many opportunities available to them. Also, in regard to Weidman's model of student socialization, students who live on campus are less likely to be exposed to the normative influence of groups other than peers and faculty (e.g., family, other friends) and more likely to be exposed to the normative messages of campus groups.

Peer Group and Faculty Normative Measures

In a pattern of findings similar to those in the first regression equation, we see that several of the measures of the peer group and faculty normative environments are initially significantly correlated with the dependent variable. However, after we control for the influence of each individual's predilections and attitudes, the magnitude of these relationships drops significantly. In fact, after all measures of the normative environments have entered the equation during block four, only student materialism remains as a statistically significant predictor of students' support for the importance of the goal of being very well off financially ($\beta = 0.08$ at entry and 0.06 after block five). However, we would expect this finding. Students who attend institutions with peer groups that are more materialistic in their leanings would be more likely to endorse the importance of the goal of being very well off financially. As with our discussion of the effect of this variable in the previous regression, the normative messages sent by this peer group are consistent with this view. In fact, students' views on this item in 1985 had the highest loading on the Materialism factor.

The block of variables containing the measures of peer and faculty normative environments helps explain 0.67% of the variance. Once again, while this is not a particularly large amount of explained variance, it is statistically significant ($p \leq 0.001$) and accounts for almost two-and-a-half percent of the explained variance. Measures of campus living arrangements and of institutional characteristics produce statistically significant changes in the R^2 in this regression equation. However, once again, the peer and faculty normative measures account for more of the explained variance in this equation than do measures of living arrangements or institutional type.

Institutional Characteristics

After we have controlled for the effects of all other variables in the equation, two measures of the structural characteristics of institutions remain as statistically significant predictors of the outcome. Students who attended institutions with larger enrollments were likely to place greater relative importance in the goal of being very well off financially four years after entering college ($\beta = 0.04$), whereas students who attended Historically Black Colleges or Universities (HBCU) were less likely to support this goal ($\beta = -0.04$). The larger the enrollment at an institution, the more likely there are to be multiple peer and normative groups communicating multiple messages. Another way of looking at this is, the larger the enrollment of an institution, the more likely that students will find a peer group (or groups) that are more materialistic in their views. On the other hand, Historically Black Colleges and Universities have served a unique role in American higher education. It may be that one of the many outcomes of attending an HBCU for students is a lessened concern for issues related to materialism and status.

Discussion and Implications

The findings of the analyses in this study are consistent with much of the earlier work done in the area of peer group effects. We see that some of the variables that were created to represent aspects of peer environments are statistically significant in both of the regression equations. Although the magnitude and breadth of these variable effects are not what we might have anticipated, this block of variables contributes more to the explained variance in each regression equation than do other measures of the college environment.

The findings of this study do not offer support for the idea that faculty norms directly affect student attitudes. The findings of an earlier study by Weidman (1979) suggest that faculty norms when aggregated at the departmental level are important in affecting value changes in students during their college years. A recent study by Milem (1994) suggests that faculty normative environments aggregated at the institutional level have direct and indirect influences on the racial attitudes of college students. On the other hand, Newcomb (1943, 1947, 1966, 1968), Newcomb & Wilson (1966), Chickering (1969), and Astin (1993) all suggest that the effects of faculty are likely to be mediated by the interactions students have with other students. The findings of this study do nothing to contradict the earlier findings of the research of this group of scholars. This does not minimize the influence of faculty; instead it suggests that the influence of

faculty may occur through more behavioral aspects of the environment (i.e., the types of behaviors in which they engage students in and out of class).

Limitations of the Study and Suggestions for Future Research

The findings of this study clearly point to the need for the development of measures that better assess aspects of the peer and faculty normative environments at different institutions. The peer normative factors were derived from individual items included on the Student Information Form (SIF), which students completed at the time they first entered college. The faculty normative factors were derived from individual items included on the 1989 Survey of College and University Faculty. The items from these surveys were not designed specifically with the intent of assessing normative environments at institutions; hence, it is possible that by including more (or different) items on these surveys more (or different) factors might emerge that represent aspects of the peer and faculty normative environments at institutions. Our understanding of the effects of peer and faculty normative groups would be furthered if future surveys of college students and faculty were designed to include items specifically designed to assess the influences of these groups.

The peer and faculty normative measures in this study were also unable to account for the amount of variability within individual institutions. While these variables may be more accurate in representing the normative environments at smaller institutions with more homogeneous student bodies, they may be less accurate in describing the normative environments at institutions with larger enrollments and/or more heterogeneous peer environments. Moreover, this problem might be resolved if an appropriate system for weighting of the normative measures, which would compensate for these differences, could be developed in future research. In a similar vein, there is a need to develop better ways to assess the influence of peer subgroups within the larger peer environment. This might best be accomplished through a program of research that combines multi-institutional with institutional level studies.

Finally, future research on the questions in this study would benefit greatly from a second follow-up survey of students in this sample, which might answer a question that is beyond the scope of this study and of most studies of college impact. Such a follow-up of students in the sample would allow us to address more fully the question of the lasting impact of college on changes in the attitudes of college students.

Notes

¹The omitted category is Race: Other.

²In order to circumvent potential problems with collinearity, the item serving as a pretest for the dependent variable in each regression was removed from the individual factor scale in that regression. Specifically, in calculating each student's scores for the Social Liberalism measure in the regression that predicts support for the belief that the wealthy should pay more taxes, the item measuring students' views toward the opinion in 1985 was removed when calculating *individual* student's scores on this factor. This was done because this item serves as the pretest in this regression. In the regression equation that predicts the importance of the goal of being very well off financially, students' support for this goal in 1985 was removed when calculating *individual* student's scores on the Materialism factor, because this measure serves as the pretest in this regression equation.

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Models of Excellence

The Baccalaureate Origins of Successful European American Women, African American Women, and Latinas

Introduction

The Problem

In the last two decades women have made dramatic progress in terms of access to American higher education. In 1991–92 women earned 54% of the baccalaureate degrees conferred by colleges and universities in the United States. Women also earned 54% of the master's degrees and 37% of the doctorates granted in 1991–92 (National Center for Educational Statistics, 1994). Despite the strong presence of women in American higher education, research and anecdotal evidence indicates that the campus climate for women at many institutions is not always welcoming. Research and anecdotal reports indicate that many women feel they are treated as “outside the norm” and as “second-class citizens” on coeducational college and university campuses (AAUW, 1992; Holland & Eisenhart, 1990; Lasser, 1987; Lockheed & Klein, 1985; Monteiro, 1980; Pearson, Shavlik, & Touchton, 1989; Perun, 1982; Riordan, 1992). Indeed, the campus climate for women has been described as “chilly” both inside and outside the classroom at coeducational institutions (Hall & Sandler, 1982, 1984; Krupnick, 1985; Pascarella, Whitt, Edison, Nora, Hagedorn, Yeager, & Terenzini, 1996; Sandler, 1987). Relative to men's experiences, outcomes associated with women's experiences in coeducational higher education include lower cognitive development, lower educational aspirations and attainment, and lower self-esteem and self-confidence (Holland & Eisenhart, 1990; Pascarella et al., 1996; Pearson, Shavlik, & Touchton, 1989; Riordan, 1992; Smith, Morrison, & Wolf, 1994; Whitt, 1992).

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The situation faced by women students is not the same across racial and ethnic groups. In fact, referring to women as a homogenous group masks significant racial and ethnic differences in both access to and experiences in higher education. Women of different racial and ethnic groups, for example, have not succeeded in higher education in equal proportions (National Center for Education Statistics, 1994). In addition, studies show that because they are discriminated against by both race and gender, the academic experiences of women of color are particularly characterized by alienation and exclusion (Carter, Pearson, & Shavlik, 1988; Guy-Sheftall & Bell-Scott, 1989; Melendez & Petrovich, 1989; Moses, 1989; Nieves-Squires, 1991; Washington & Newman, 1991; Welch, 1992; Wilkerson, 1987).

Given the negative campus environment experienced by women of all racial and ethnic groups, the time has come when we must examine assumptions about who our students are. We must look at what students bring to campuses in the ways of strengths and needs, and we must critically examine what changes are needed in institutional structures, policies, practices, and programs to enhance the quality of campus life for women. In accomplishing these goals, it is helpful to determine if there are certain institutional types that are currently meeting the needs of women students better than others.

Research Questions

This study was designed to answer two central research questions. First, which institutions and which institutional types graduate the largest proportions of successful women from different racial/ethnic groups? Second, what institutional factors are associated with this success? In answering these questions, this study addresses the following subquestions:

- Are institutions that are successful with one group of women also successful with women of other racial and ethnic groups?
- From a quantitative perspective, which institutional factors are the best predictors of successful institutions?
- Do these institutional factors vary depending on the racial and ethnic background of their women students?

Theoretical Framework

The present study utilizes a theoretical framework that examines institutions and institutional characteristics as a means to explain student post-baccalaureate success. Research on the impact of college environments shows that the nature of the learning environment produces im-

portant differences in students' aspirations, self-confidence and career potential (Chamberlain, 1988). This orientation stands in contrast to the belief that student success or failure in higher education is due primarily to individual background characteristics. According to Smith (1989), researchers need to study what institutions are doing to inhibit or encourage individuals to succeed, rather than "blaming the victim." This requires researchers to shift the focus of analysis from the individual to the institution. Indeed, while recognizing the importance of student background variables, a tacit goal of the college impact literature is to isolate the various structural and normative features of institutions that seem to encourage student success (Astin, 1977, 1992; Bowen, 1977; Chickering, 1969; Feldman & Newcomb, 1969; Kuh, Schuh, Whitt, & Associates, 1991; Pace, 1990; Pascarella & Terenzini, 1991; Smith, 1989; Tinto, 1987).

The specific approach used to examine and determine institutional success in the present study is based on baccalaureate origin research. Pioneered by Knapp and Goodrich (1952), baccalaureate origin studies examine where individuals who have attained some measurable degree of success received their undergraduate degrees. The unit of analysis in these studies is the academic institutions themselves, rather than the achievers. Baccalaureate origin studies represent both a methodological and a theoretical lens through which the present study looks at which institutions seem to inhibit or encourage the success of women from different racial and ethnic groups. Baccalaureate origin studies are powerful, because they examine the entire population of eligible institutions rather than a sample of institutions. It is important to note that all baccalaureate origin studies face the same major criticism — they examine institutions as their unit of analysis and therefore are limited in their ability to control for the input characteristics of the "achievers." Completely correcting this "problem" is beyond the scope of the given methodology. However, inability to control for individual student input characteristics does not invalidate the results of baccalaureate origin studies, rather it requires the reader to consider the findings of these studies in the larger context of the research literature on the impact of college environments on students.

Previous baccalaureate origin studies have offered robust and consistent evidence that special focus colleges and universities — institutions committed to the education of one population of students, based on race, ethnicity, and/or gender — have proven to be quite successful in educating their students compared to predominantly white, coeducational institutions. Women's colleges, historically black colleges, and Hispanic-serving institutions are examples of special focus institutions.

Overall, special focus institutions educate only a small proportion of students. Currently, for example, there are only 69 baccalaureate-grant-

ing women's colleges (College Entrance Examination Board, 1994). In 1991–92, these institutions conferred only 2.5% of all bachelor's degrees awarded to women (National Center for Education Statistics, 1994). There are currently 84 historically black colleges and universities that grant baccalaureate degrees (College Entrance Examination Board, 1994). Two of the historically black colleges — Spelman and Bennett — are also women's colleges. In 1991–1992, historically black colleges conferred 39% of the bachelor's degrees earned by African Americans, though they represented only 3% of all institutions in the United States (National Center for Educational Statistics, 1994). Hispanic-serving colleges and universities are defined through their membership in the Hispanic Association of Colleges and Universities (HACU), a national association representing postsecondary institutions in the United States in which Latino students represent at least 35% of the total student enrollment. Unlike historically black colleges and universities, Hispanic-serving institutions need not have defined their institutional mission in terms of educating Latino students. In 1990, there were 28 baccalaureate-granting Hispanic-serving institutions located in the United States. These institutions enrolled 9% of the Latino students attending 4-year colleges and universities in the continental United States (Hispanic Association of Colleges and Universities, 1993).

Despite the small proportion of students who attend special focus institutions, results of previous studies suggest the important contribution of these institutions (Berrian, Primas, & Shoats, 1982; National Association of Independent Colleges and Universities, 1991). In particular, research has shown that women's colleges graduate disproportionate numbers of successful women, undifferentiated by ethnicity (Fuller, 1986a, 1986b, 1989a, 1989b; Oates & Williamson, 1978; Rice & Hemmings, 1988; Sharpe & Fuller, 1995; Tidball, 1973, 1974, 1980, 1985, 1986, 1989; Tidball & Kistiakowsky, 1976). Previous studies using the baccalaureate origins methodology have also concluded that historically black colleges have graduated disproportionate numbers of successful African Americans, undifferentiated by gender (Brazziel, 1983; Fuller, 1989b; Payne, 1987/1988; Pearson & Pearson, 1985; Thompson, 1986; Thurgood & Weinman, 1991). In contrast to the large number of studies about women's colleges and historically black institutions, Hispanic-serving colleges have received almost no attention by education researchers. Recently, however, Solarzano (1995) published an analysis of the baccalaureate origins of Chicana and Chicano doctorates and concluded that Hispanic-serving colleges appear to be the major producers of Chicana/o social science doctorates.

Limitations of Previous Baccalaureate Origin Studies

With two exceptions (Fuller, 1989b and Solarzano, 1995), previous baccalaureate origin studies have either examined women, undifferentiated by race and ethnicity, or African Americans, undifferentiated by gender. As such, the findings of these studies fail to address the impact of gender and race on baccalaureate origins. Further, because Solarzano's study only addresses the baccalaureate origins of Chicanas in the social sciences, it is currently impossible to determine the role of Hispanic-serving colleges in graduating Latinas with doctorates in other fields. This constitutes an important gap in the literature, creating a need to replicate the baccalaureate origin studies looking at race and gender to determine the role of minority- and majority-serving women's colleges and the role of minority and majority-serving coeducational institutions in graduating successful women. Addressing the issue of race and gender is the greatest contribution to the literature offered by the present study.

The present study also fills two other gaps in the baccalaureate origins literature. First, it has been suggested in the research literature and in the popular press that baccalaureate origin studies, which demonstrated the success of women's colleges, are no longer valid because they deal with women who earned their bachelor's degrees before 1960 (see for example, Estrich, 1994; Giele, 1987; Oates & Williamson, 1978; Talbot, 1994; Warner, 1994). In other words, critics have suggested that the reason that women's colleges were successful in the past was that the most prestigious institutions in the country were not open to women, and therefore women's colleges were the only educational option available to high-achieving women. These critics attribute previous findings to the period studied, rather than to the institutions themselves. The present study, which looks at women who earned bachelor's degrees since 1965, addresses this criticism. This update is particularly important given that many previously single-sex colleges and universities are now marking two decades of coeducation. Now is a good time to discern the effects of coeducational status on the baccalaureate origins of successful women.

The present study also addresses one of the strongest critiques of previous baccalaureate origin studies. Specifically, several researchers have criticized the baccalaureate origin methodology for its failure to control for student background characteristics (Crosby et al., 1994; Giele, 1987; Stoecker & Pascarella, 1991). As stated earlier, because baccalaureate origin studies use institutions as the unit of analysis rather than individuals, it is difficult to control for a full range of student background characteristics. Nonetheless, the present study uses institutional characteristics — such as institutional selectivity — as a proxy for student characteris-

tics. In this way, the present study not only responds to existing criticism but also provides new information that expands the viability of using the baccalaureate origins methodology.

Methodology

This study involved ranking baccalaureate-granting institutions according to their proportion of women graduates who achieved post-baccalaureate success. In particular, the study examined the effects on the baccalaureate origins of successful women of attending either a single-sex or coeducational institution (institutional gender) and the effects of attending either a predominantly white or a predominantly minority-serving institution (institutional race). Separate analyses were conducted for three groups of women: European Americans, African Americans, and Latinas. For purposes of this study, success was measured in two ways: (1) earning a bachelor's degree after 1965 from a United States college or university and subsequently earning a doctoral degree between 1975 and 1991, or (2) earning a bachelor's degree after 1965 and being listed in one of three 1992–1993 reference books — *Who's Who In America* (Marquis, 1992), *Who's Who Among Black Americans* (Brelín, 1992), and *Who's Who Among Hispanic Americans* (Unterburger, 1993).

Caveats

At the outset, several caveats must be stated regarding the definitions of success used in this study. The three *Who's Who* books used in this study define "success" as individuals who have achieved a certain level of recognized prominence in a chosen profession. Each *Who's Who* book uses a similar definition of success, which is based on the reference value of the biographee. Reference value is defined in terms of a person's position of responsibility within prominent organizations, such as the government, corporations, and nonprofit institutions. As a definition of success, inclusion in *Who's Who* fails to identify individuals who have achieved success outside the boundaries of the commonly recognized professions or whose achievements within the recognized professions have been made in unconventional ways. The three *Who's Who* books used in this study do not suffer from self-selection bias; individuals nominated for inclusion in these books are asked to submit biographies, and editors write biographies based on secondary sources of information for those who fail to return the forms.

There are also problems inherent in relying on doctoral attainment as a measure of success. Possession of a doctoral degree defines success as

having reached a certain academy-recognized level of academic achievement. This definition excludes intellectuals who have not followed the academy's process of socialization into the intellectual profession and is based on the assumption that all individuals who earn doctoral degrees do so as a stepping stone to a consciously decided upon path toward the academic profession. It fails to recognize that a certain proportion of individuals who earn doctoral degrees may be characterized by mixed motivations and that their scholarly careers may not be consistently characterized by notable intellectual achievement. We have all known students who remain in graduate programs more out of unwillingness to "get a real job" than out of love for the intellectual life and who earn their doctoral degrees more through long-term, plodding effort than through brilliant intellectual accomplishment.

Despite these caveats, there are several reasons to support the definitions of success used in this study. First, despite their less-than-perfect ability to serve as measures of success, inclusion in the *Who's Who* books and attainment of a doctoral degree are commonly and widely recognized as accomplishments of the "successful" individual in United States culture. That is, while there may be other indicators of success, attaining a doctoral degree and being listed in a *Who's Who* book are certainly valid measures of success. Second, both the *Who's Who* books and data from the Doctorate Records File provide a convenient and accessible way to tabulate the baccalaureate origins of prominent women nationally, across disciplines, and across career choices. Third, because other researchers have used the same definitions and employed similar methodologies, this replication allows one to compare the present results with previous research findings (e.g., Brazziel, 1983; Fuller, 1986a, 1986b, 1989a, 1989b; Hall, 1984; and Tidball, 1974, 1985, 1986). Finally, use of these measures of success allows one to look at the entire population of eligible institutions rather than merely relying on a sample of institutions. This strengthens the power of the results.

*The Numerators: Doctorate Records File Data
and Who's Who Data*

A proportional ranking of the baccalaureate origins of European American women, African American women, and Latinas who earned doctoral degrees between 1975 and 1991 provided a measure of the relative success of individual institutions and of institutional types. The method used to create these rankings loosely replicated those followed by Brazziel (1983), Fuller (1986a, 1986b, 1989a, 1989b), Hall (1984) and Tidball (1974, 1985, 1986). Each of these studies analyzed data from the Doctorate Records File (DRF). The DRF contains information

on the baccalaureate origins of every individual who received a doctorate from an American university since 1920. The National Research Council of the National Academy of Sciences is responsible for gathering these data annually from all doctorate-granting institutions in the United States.

The current study used data on all self-identified European American women, African American women, and Latinas who earned bachelor's degrees since 1965 and who earned doctorates between 1975 and 1991. The current analysis only included United States citizens who earned bachelor's degrees from postsecondary institutions located in the United States. The DRF provided all the data for each institution separately. The 1975 cutoff was necessary because the DRF did not consistently collect data on ethnicity prior to that year. To protect the anonymity of individual women, the DRF only released the names of baccalaureate-granting institutions that graduated five or more women who earned doctoral degrees between 1975 and 1991. In addition, because of the large number of institutions that granted undergraduate degrees to five or more European American women who subsequently earned doctorates, I further limited the analysis for this group to institutions that had graduated twenty or more European American women.

The methodology employed in the analysis of the baccalaureate origins of *Who's Who* achievers loosely replicated studies conducted by Tidball (1973, 1980), Rice and Hemmings (1988), and Oates and Williamson (1978). To determine which institutions produced a disproportionate number of successful women, data were collected from the 1992–1993 editions of three reference books — *Who's Who In America* (Marquis, 1992), *Who's Who Among Black Americans* (Brelín, 1992), and *Who's Who Among Hispanic Americans* (Unterburger, 1993). In collecting the data, I read every entry in each book and recorded the baccalaureate-granting institution and the graduation year of every woman who met the following criteria: (1) if the person listed was female; (2) if she possessed a baccalaureate degree; (3) if she had earned her baccalaureate degree since 1965; (4) if she had received her bachelor's degree within the United States; and (5) if the necessary information was complete. If more than one undergraduate institution was listed for a woman in *Who's Who*, I only recorded the institution that granted the bachelor's degree.

Who's Who in America included approximately 80,500 biographies; of this number, 1.8% were eligible for inclusion in this study. *Who's Who Among Black Americans* included approximately 19,000 biographies; of this number, 8.4% met the criteria for inclusion in this study. Finally, *Who's Who Among Hispanic Americans* included approximately

5,000 biographies; 12.6% of these were eligible for inclusion in this study. Within the three reference books, the majority of biographees were excluded because they were male. More precise data on those excluded from the study were not collected. To qualify for inclusion in this study, institutions needed to have graduated five or more women who either were listed in a *Who's Who* book or who had earned a doctorate.

Three sets of rankings were conducted using the information collected from the *Who's Who* books. One set of rankings, representing the baccalaureate origins of Latinas, came solely from information listed in *Who's Who Among Hispanic Americans* (Unterburger, 1993). Similarly, rankings of African American women came solely from information listed in *Who's Who Among Black Americans* (Brelín, 1992). It was assumed that women listed in these two reference books were Latina and African American, respectively. Identifying European Americans from *Who's Who in America* (Marquis, 1992) was slightly more complex. Although *Who's Who in America* (Marquis, 1992) did not directly provide information about the race/ethnicity of those listed, careful reading of the biographies indicated that the majority of the women listed were European American. To ensure that I had excluded Latinas and African American women from inclusion in the rankings for European American women, I cross-checked those listed in *Who's Who in America* (Marquis, 1992) with those listed in either *Who's Who Among Black Americans* (Brelín, 1992) or *Who's Who Among Hispanic Americans* (Unterburger, 1993).

The Denominator

In this study, the mean undergraduate enrollment of each baccalaureate-granting institution was used to control for institutional size. These figures served as denominators in the productivity ratios. As stated earlier, the numerators represented the number of achievers per institution. Controlling for size is important because it allows one to compare doctorate and *Who's Who* productivity across a range of institutions. Failure to control for size gives larger institutions an unfair advantage; no matter how successful a small liberal arts college is, it won't have graduated as many women as a large institution. Controlling for size allows one to examine equivalencies.

Data for the denominator come from a survey conducted by the Federal Office of Civil Rights, under the authority of the Civil Rights Act of 1964. The survey, conducted every other year since 1966, asks every postsecondary institution in the United States to provide the number of full-time equivalent undergraduates, disaggregated by gender. The data include only United States citizens and resident aliens.

Computation of the Productivity Ratios

Productivity ratios were computed to control for institutional size. The number of either doctorate or *Who's Who* achievers for each institution was used as a numerator for the productivity ratios. The mean undergraduate enrollment per institution served as denominators of the productivity ratios. Once computed, the ratios were multiplied by one thousand to transform the number into a simple whole number. The productivity ratios used in this study convert all institutions, regardless of size, to a static base of one thousand students. An example is helpful in understanding how to interpret the productivity ratios. If an institution granted bachelor's degrees to 50 African American women who subsequently earned doctorates, and the institution's mean enrollment was 1,000 students per year, then the institution's productivity ratio would be 50. A productivity ratio of 50 means that the institution graduated 50 African American women who subsequently earned doctorates per an enrollment size equalling one thousand students.

The decision about how to create the productivity ratios to control for size deserves some discussion. Mean undergraduate enrollment is used as a proxy for institutional size because it was the information most readily and reliably available. Admittedly, the use of mean undergraduate enrollment as a denominator is not a perfect measure for determining productivity, in part because there is not as direct a connection between those enrolled at an institution and those who achieve post-baccalaureate success as there is between a graduate of an institution and her eventual success. In addition, the use of mean undergraduate enrollment fails to take into account the fact that many university campuses have much greater total enrollments than colleges with similar-sized undergraduate student bodies due to their graduate enrollments. Therefore, undergraduate enrollment does not fully describe size for these institutions. A third potential criticism of the use of mean enrollment as the denominator is that not everyone in the denominator could end up in the numerator. This, according to some critics, could unfairly favor institutions that are single-sex or minority-serving institutions. Though these concerns have some validity, the author insists that mean enrollment is still the best measure to control for institutional size. The use of other denominators would control for factors other than size. Nonetheless, to supplement the primary denominator, the author also conducted separate analyses using the mean enrollment of women and mean enrollment of women of color as denominators for the productivity ratios. A presentation of the results based on these secondary denominators and an interpretation of these results is found in the appendix of this article.

Data Collected per Eligible Institution

Institutional gender. Institutional gender was determined from lists of women's colleges provided by the Women's College Coalition. Eligible women's colleges are signified as "Wc" on the tables under the heading "institutional gender." Institutions that are currently coeducational but which were women's colleges prior to 1965 are considered women's change colleges. Women's change colleges are represented on the tables as "Wch" followed by a number. The number represents the year that the institution first admitted men. This figure was determined from the *Guide to Colleges and Universities* (American Council on Education, 1994). Sarah Lawrence College, for example, is labeled an "Wch — 68." This means that it is a women's change college that began admitting men in 1968. Institutions that did not admit men until after 1985 are considered women's colleges for the purpose of this study. There were 61 women's change colleges included among the eligible institutions in this study. The tables list colleges and universities that have been coeducational since 1965 as "Coed" on the tables. Men's change colleges, institutions that were men's colleges but that began admitting women after 1965, are indicated as "Mch" on the tables. Again, these institutions are followed by a number, representing the year that the institution began enrolling women. There were 33 men's change colleges that began admitting women after 1965. For purposes of the regression analyses, institutional gender was coded as a dichotomous variable with (1) for coeducational and (2) for women's college.

Institutional race. Institutional race was determined from a list of historically black colleges and universities in *Black Issues of Higher Education* (1992) and from a membership list of the Hispanic Association of Colleges and Universities (HACU) (1993). These institutions are represented on the tables as "HBCU" or "HACU" respectively, under the category "institutional race." Institutions not listed in these two sources were classified as predominantly white institutions and are marked as "Pw" on the tables. For the regression analyses, institutional race was coded as a dichotomous variable with predominantly white equal to (1) and minority-serving institutions (historically black or Hispanic-serving) equal to (2). Institutional race served as an independent variable for regression analyses conducted for African American women and Latinas.

Institutional control. Institutional control, whether public or private, was determined from data in the *Carnegie Classification in Higher Education Institutions* (1987). These data are listed on the tables as either "Priv" or "Pub" When computing the regression equations, institutional

control was coded as a dichotomous variable with (1) for public and (2) for private. Institutional control was an independent variable for all the regressions conducted.

Institutional selectivity. The study relied on data from *Barron's Profiles of American Colleges* (1986) to determine institutional selectivity. Barron's uses a 6-point selectivity index that ranges from "most competitive (6)" to "noncompetitive (1)." Barron's based the index on 1985–1986 freshman admissions criteria. Specifically, it examined median entrance examination scores, minimum class rank, and high-school grade point averages. It also considered the institution's acceptance rate. Each regression equation used the 6-point scale of institutional selectivity as an independent variable.

Carnegie classification. Based on data listed in the *Carnegie Classification of Higher Education Institutions* (1987), colleges and universities included in this study were classified in one of the following nine categories: Research I (ResI); Research II (ResII); Doctoral I (DI); Doctoral II (DII); Comprehensive I (CompI); Comprehensive II (CompII); Liberal Arts I (LAI); Liberal Arts II (LAII); or Specialized Institutions (SP). The Carnegie Classifications, though not explicitly analyzed in this study, provide helpful information about the individual institutions that graduated successful women. Carnegie classifications are noted on the tables in their abbreviated forms.

Analyses Conducted

Two productivity ratios were computed for each of the groups of women: total doctorate data divided by mean enrollment and total *Who's Who* data divided by mean enrollment. Along with the analyses conducted for each of the three groups, for the European American women separate productivity ratio analyses of both total *Who's Who* and total doctorate data were also conducted for institutions designated as "less selective."

As stated earlier, this study uses the population of eligible institutions rather than a sample. As such, the use of inferential statistics is not meant to demonstrate whether the findings are generalizable to the population of interest but are used to demonstrate the power of the differences found and to associate the strength of certain variables with others. Specifically, comparisons were made between different types of institutions using one-way analysis of variance to test whether different types of institutions yielded different average productivity ratios. *Post hoc* Tukey tests were conducted to determine differences between the institutional types.

This study also involved the computation of several stepwise multiple regression analyses to predict both doctorate and *Who's Who* produc-

tion. Using mean substitution to handle missing information and controlling for multicollinearity by setting the tolerance at 0.30, multiple regression predicted the various dependent variables using institutional race, institutional control, institutional selectivity, institutional gender, mean enrollment, and mean enrollment of women of color as independent variables. The total population of institutions for each group was used in these analyses.

Results

European American Women

The working data base for the present study is the universe of baccalaureate-granting institutions in the United States that granted bachelor's degrees to at least 20 European American women since 1965 who received doctoral degrees between 1975 and 1991. Seven hundred and sixty-one (761) institutions met these criteria. These 761 institutions accounted for 94% of the European American women who earned doctorates between 1975 and 1991. The remaining 6% received their bachelor's degrees from institutions outside the United States or from institutions that graduated fewer than 20 European American women with doctorates. In real numbers, these colleges and universities granted 95,658 bachelor's degrees to European American women who later earned doctorates. Refer to Table 1 for demographic information about the 761 eligible institutions.

TABLE 1
Descriptive Statistics of Baccalaureate Institutions for European American Women

	Eligible Doctorates ^a	Eligible <i>Who's Who</i> ^b	"Top 10" Institutions ^c
INSTITUTIONAL TYPE			
Predominantly white women's	8%	10%	46%
Predominantly white women's change	8%	6%	46%
Predominantly white coeducational	80%	81%	8%
Predominantly white men's change	4%	3%	0%
INSTITUTIONAL CONTROL			
Public	44%	46%	0%
Private	56%	54%	100%
ENROLLMENT DATA			
Mean enrollment	6,038	9,586	1,510
INSTITUTIONAL SELECTIVITY			
Mean selectivity	3.2	3.6	4.9

^aPercentages represent data on the 761 institutions that graduated at least 20 European American women since 1965 who earned doctorates.

^bPercentages represent data on the 231 institutions that graduated at least 5 European American women since 1965 who were listed in the 1992-1993 edition of *Who's Who in America*.

^cPercentages represent data on the 13 institutions listed in the "top ten" lists for European American women.

From the 761 institutions in the eligible population, data on the baccalaureate origins of European American women listed in the 1992–1993 edition of *Who's Who in America* (Marquis, 1992) were also collected. Again, all of the women included in the analysis earned their undergraduate degrees after 1965. A subpopulation of 231 institutions met these criteria. In real numbers, these 231 institutions granted bachelor's degrees to 1,411 European American women listed in *Who's Who in America* (Marquis, 1992). This sub-population is similar in composition to the total population of 761 institutions. Refer to Table 1 for demographic information about this sub-population.

Table 2 lists the "top ten" baccalaureate-granting institutions for European American women who earned doctorates or who were listed in *Who's Who in America* (Marquis, 1992). Institutions listed in this table are ranked according to the value of their productivity ratios. There were 13 institutions included in the two "top ten" lists (Table 2). The characteristics of these institutions are different from the characteristics of the total eligible population (Table 1). Women's colleges and women's change colleges are overrepresented among the "top ten" institutions. Compared to the population of eligible institutions, a higher proportion of the 13 "top ten" institutions are privately controlled. The average undergraduate enrollment for the "top ten" institutions is also significantly smaller than the average for the total eligible population. In addition, the average selectivity index of these 13 institutions is 4.9 on the 6-point scale, which is higher than the average for the total eligible population (3.2). Finally, all 13 "top ten" colleges are Liberal Arts I institutions.

European American women in this analysis attended predominantly white women's colleges (Wc PW), predominantly white women's change colleges (Wch PW), predominantly white coeducational colleges and universities (Coed PW), and predominantly white men's change colleges (Mch PW). Two one-way analyses of variance were conducted for European American women comparing the mean productivity ratios of various institutional types (Table 3). Both analyses yielded statistically significant *F*-ratios ($p < 0.0001$). In both analyses, women's colleges had the highest average productivity ratios and historically coeducational institutions had the smallest average productivity ratios.

Interpreting the productivity ratio mean is similar to interpreting the productivity ratio for individual institutions. For *every one thousand students* who attended an institutional type, the productivity ratio indicates the mean number of European American women who achieved post-baccalaureate success. Women's colleges, for example, were 3.8 times more productive of European American women doctorates than historically coeducational institutions. According to the Tukey test, this difference

TABLE 2

Top 10 Doctoral Productivity and *Who'sWho* Productivity for the Three Groups of Women

Institution	State	Gender	Control	Race	Carnegie	Prestige	Mean Size	Total Doctorates	Productivity Ratio
EUROPEAN AMERICAN WOMEN DOCTORAL ACHIEVEMENT									
1 Bryn Mawr	PA	wc	priv	PW	LAI	6	944	381	404
2 Wellesley	MA	wc	priv	PW	LAI	6	1945	615	316
3 Barnard	NY	wc	priv	PW	LAI	5	2100	652	311
4 Mt. Holyoke	MA	wc	priv	PW	LAI	5	1896	522	275
5 Smith	MA	wc	priv	PW	LAI	5	2518	662	263
6 Swathmore	PA	coed	priv	PW	LAI	6	1224	29	240
7 Sarah Lawrence	NY	Wch 68	priv	PW	LAI	4	817	159	195
8 Vassar	NY	Wch 69	priv	PW	LAI	5	2112	411	195
9 Radcliffe	MA	Wch 72	priv	PW	LAI	6	1942	376	194
10 Goucher	MD	wc	priv	PW	LAI	3	912	170	186
AFRICAN AMERICAN WOMEN DOCTORAL ACHIEVEMENT									
1 Spelman	GA	wc	priv	HBCU	LAI	3	1199	109	91
2 Fisk	TN	coed	priv	HBCU	LAI	3	1089	85	78
3 Bennett	NC	wc	priv	HBCU	LAI	2	578	38	66
4 Tougaloo	MISS	coed	priv	HBCU	LAI	3	748	34	45
5 Talladega	ALA	coed	priv	HBCU	LAI	2	552	23	42
6 Hampton	VA	coed	priv	HBCU	Compl	3	2742	96	35
7 Tuskegee	ALA	coed	priv	HBCU	Compl	2	2803	93	33
8 Howard	DC	coed	priv	HBCU	Resl	3	6915	208	30
9 Lincoln	PA	coed	pub	HBCU	LAI	2	1016	24	24
10 Morgan State	MD	coed	pub	HBCU	Compl	2	3919	86	22
LATINA DOCTORAL ACHIEVEMENT									
1 Our Lady of the Lake	TX	Wch 69	priv	HACU	Compl	2	1016	22	22
2 Incarnate Word	TX	Wch 70	priv	HACU	LAI	3	1034	14	14
3 Barry	FLA	Wch 75	priv	HACU	Compl	3	1383	13	9

TABLE 2 (Continued)

Institution	State	Gender	Control	Race	Carnegie	Prestige	Mean Size	Total Doctorates	Productivity Ratio
LATINA DOCTORAL ACHIEVEMENT (Continued)									
4 Barnard	NY	wc	priv	PW	LAI	5	2098	18	9
5 U. of Miami	FLA	coed	priv	HACU	ResI	4	9272	60	6
6 Bryn Mawr	PA	wc	priv	PW	LAI	6	944	5	5
7 Texas Woman's U.	TX	wc	pub	PW	DI	2	4130	21	5
8 Texas A & I	TX	coed	pub	HACU	Compl	2	4922	25	5
9 Pan American	TX	coed	pub	HACU	Compl	1	6196	30	5
10 Pomona	CA	coed	pub	PW	LAI	6	1333	6	4
EUROPEAN AMERICAN WOMEN WHO'S WHO ACHIEVEMENT									
1 Wellesley	MA	wc	priv	PW	LAI	6	1945	35	18
2 Sarah Lawrence	NY	Wch 68	priv	PW	LAI	4	817	12	15
3 Vassar	NY	Wch 69	priv	PW	LAI	5	2112	30	14
4 Bryn Mawr	PA	wc	priv	PW	LAI	6	944	13	14
5 Radcliffe	MA	Wch 72	priv	PW	LAI	6	1942	24	12
6 Barnard	NY	wc	priv	PW	LAI	5	2100	24	11
7 Smith	MA	wc	priv	PW	LAI	5	2518	26	10
8 Manhattanville	NY	Wch 71	priv	PW	LAI	4	979	9	9
9 Connecticut College	CT	Wch 69	priv	PW	LAI	5	1654	15	9
10 Bennington	VT	Wch 78	priv	PW	LAI	3	585	5	9
AFRICAN AMERICAN WOMEN WHO'S WHO ACHIEVEMENT									
1 Fisk	TN	coed	priv	HBCU	LAI	3	1089	44	40
2 Bennett	NC	wc	priv	HBCU	LAI	2	578	20	35
3 Spelman	GA	wc	priv	HBCU	LAI	3	1199	30	25

4	Howard	DC	coed	priv	HBCU	ResI	3	6915	131	19
5	Tougaloo	MISS	coed	priv	HBCU	LAI	3	748	11	15
6	Knoxville	TN	coed	priv	HBCU	LAI	3	778	11	14
7	Lincoln	PA	coed	pub	HBCU	LAI	2	1016	13	13
8	Stillman	ALA	coed	priv	HBCU	LAI	3	644	8	12
9	Mills	CA	wc	priv	PW	LAI	4	794	9	11
10	Talladega	AL	coed	priv	HBCU	LAI	3	552	6	11
LATINA <i>Who's Who</i> ACHIEVEMENT										
1	Our Lady of the Lake	TX	Wch 69	priv	HACU	ComplI	2	1016	10	10
2	Incarinate Word	TX	Wch 70	priv	HACU	LAI	3	1034	7	7
3	New Mexico Highlands	NM	coed	pub	HACU	ComplI	2	1749	9	5
4	Trinity U.	TX	coed	priv	PW	Compl	4	2362	11	5
5	Barry	FLA	Wch 75	priv	HACU	Compl	3	1383	6	4
6	Barnard	NY	wc	priv	PW	LAI	5	2098	8	4
7	Texas Woman's U.	TX	wc	pub	PW	DI	2	4130	12	3
8	Texas A & I	TX	coed	pub	HACU	Compl	2	4922	13	3
9	U. of Miami	FLA	coed	priv	HACU	ResI	4	9272	23	2
10	Pomona	CA	coed	priv	PW	LAI	6	1333	3	2

TABLE 3
Analysis of Variance of European American Women Achievers

Groups	Doctorate Results			Who's Who Results		
	N	Mean	SD	N	Mean	SD
Predominantly white women's (Wc PW)	58	95.95	81.02	23	6.10	4.70
Predominantly white women's change (Wch PW)	59	44.62	37.64	13	5.20	4.91
Predominantly white coeducational (Coed PW)	611	25.41	27.13	188	0.88	0.98
Predominantly white men's change (Mch PW)	33	29.66	24.08	7	1.12	0.92
Doctorate results: $F = 74.6042^{***}$ $n = 761$						
Doctorate Tukey's HSD results:						
Wc PW significantly (*) different from all other groups						
Wch PW significantly (*) different from Coed PW						
Who's Who results: $F = 84.2114^{***}$ $n = 231$						
Who's Who Tukey's HSD results:						
Wc PW significantly (*) different from Coed PW and Mch PW						
Wch PW significantly (*) different from Coed PW and Mch PW						

* $p < 0.05$. *** $p < 0.0001$.

was statistically significant (Table 3). The Tukey test results also demonstrate that the mean for women's colleges was significantly greater than the mean productivity ratios for the men's and the women's change colleges in the doctoral analysis. Women's change colleges also had a significantly higher mean doctoral productivity than did the historically coeducational institutions.

Further, Table 3 indicates that women's colleges produced 6.9 times as many *Who's Who* achievers as did historically coeducational institutions. Again, this difference was statistically significant. Women's colleges also had significantly higher means than did men's change colleges in the *Who's Who* analysis. The productivity mean for women's change colleges was also significantly higher than the means for both the historically coeducational and the men's change colleges in the *Who's Who* analysis.

Two stepwise multiple regressions were conducted to examine the institutional variables that best predicted doctorate productivity and *Who's Who* productivity. Independent variables included institutional gender, institutional control, institutional selectivity, and mean enrollment. Both regression analyses yielded statistically significant regression equations ($p < 0.0001$). Table 4 displays the results of these analyses. Institutional gender was the best predictor of European American women doctorate productivity. Institutional selectivity, institutional control, and mean enrollment, in that order, were also significant predictors (Table 4). These four variables explain almost 40% of the variance in the dependent variable. The regression predicting *Who's Who* productivity yielded the following order of significant independent variables: institutional gender, institutional selectivity, and mean enrollment (Table 4). For this equation, the three significant predictors explain 49% of the variance in the dependent variable. The direction of the betas in these analyses indi-

TABLE 4
Regression of European American Women Achievers

Variable	Doctorate Results	<i>Who's Who</i> Results
	Beta*	Beta*
Institutional gender	0.4207	0.5887
Institutional selectivity	0.3908	0.2550
Institutional control	0.1141	
Mean enrollment	-0.0782	-0.1514
Doctorate results: Multiple $R = 0.6338$; Adjusted R Square = 0.3985; $n = 757$; $F = 126.8960^{***}$		
<i>Who's Who</i> results: Multiple $R = 0.7051$; Adjusted R Square = 0.4905; $n = 228$; $F = 74.7928^{***}$		

*All betas significant at the $p < 0.05$ level. *** $p < 0.0001$.

cated that *women's colleges, more selective institutions, private institutions* and *smaller institutions* were more likely to graduate successful European American women.

Because institutional selectivity was an important predictor of institutional success for European American women, separate analyses were conducted for "less selective" institutions. To differentiate between "less selective" and "more selective" institutions, the 6-point selectivity index described in *Barron's Profiles of American Colleges* (1986) was recoded to a 2-point scale. Institutions initially ranked as 4 or below were considered "less selective." Using only those institutions defined as "less selective," I created rankings of both doctorate and *Who's Who* productivity. There were 680 institutions classified as less selective from the pool of 761 eligible institutions. Among these institutions were 563 (83%) coeducational institutions, 16 (2%) men's change colleges, 56 (8%) women's change colleges, and 44 (7%) women's colleges. Forty-seven percent (322) of these institutions were public; 53% (358) were private. The mean enrollment of these institutions was 6,199 undergraduates.

There were 16 institutions that occurred in the "top ten" lists for less selective institutions (Table 5). The characteristics of these "top ten" institutions were different than those of the entire "less selective" group. Thirty-one percent of these institutions were coeducational colleges and universities, 19% were women's change colleges and 50% were women's colleges. All but two of the institutions in the "top ten" lists were private. The mean enrollment at these institutions was 970 undergraduates. Finally, the Carnegie Classifications of this group were as follows: 2 (13%) Research I Universities; 1 (6%) Comprehensive I Institution; 11 (69%) Liberal Arts I Colleges; and 2 (13%) Liberal Arts II Colleges.

Two one-way analyses of variance were computed to compare institutional types for the less selective subgroup. The results of both analyses were similar: the mean productivity of women's colleges was significantly higher than the mean for coeducational institutions and the mean for men's change colleges. In the doctoral productivity analysis, the women's college mean was 3.5 times higher than the coeducational mean. In the *Who's Who* analysis, the women's college mean was 6.5 times higher than the mean for the coeducational institutions. In both analyses, the mean productivity for women's change colleges was significantly higher than the mean for coeducational institutions (Table 6).

African American Women

United States colleges and universities that granted bachelor's degrees to at least 5 African American women since 1965 who received doctoral

TABLE 5

Top 10 "Less Selective" Institutions Ranked by European American Women Achievers

Institution	State	Gender	Control	Carnegie	Selectivity	Mean Size	Total Doctorates	Productivity Ratio
TOTAL PERIOD DOCTORAL ACHIEVEMENT								
1 Sarah Lawrence	NY	Wch 68	priv	LAI	4	817	159	195
2 Goucher	MD	wc	priv	LAI	3	912	170	186
3 Agnes Scott	GA	wc	priv	LAI	4	571	102	178
4 Wilson	PA	wc	priv	LAI	3	336	51	152
5 Chatham	PA	wc	priv	LAI	3	529	79	149
6 Emmanuel	MA	wc	priv	LAI	3	950	128	135
7 UC San Francisco	CA	coed	priv	ResI	4	298	40	134
8 Bennington	VT	Wch 78	priv	LAI	3	585	74	126
9 U of Rochester	NY	coed	priv	ResI	4	4265	531	124
10 Albertus Magnus	CT	wc	priv	LAI	3	444	54	122

Institution	State	Gender	Control	Carnegie	Selectivity	Mean Size	Who's Who	Productivity Ratio
TOTAL PERIOD Who's Who ACHIEVEMENT								
1 Sarah Lawrence	NY	Wch 68	priv	LAI	4	817	12	15
2 Manhattanville	NY	Wch 71	priv	LAI	4	979	9	9
3 Bennington	VT	Wch 78	priv	LAI	3	585	5	9
4 Hollins	VA	wc	priv	LAI	3	822	7	9
5 Goucher	MD	wc	priv	LAI	3	912	7	8
6 Agnes Scott	GA	wc	priv	LAI	4	571	4	7
7 New College	FL	coed	pub	LAI	4	512	3	6
8 Simmons	MA	wc	priv	Compl	3	1590	9	6
9 Bard	NY	coed	priv	LAI	4	706	3	4
10 Western Maryland	MD	coed	priv	LAI	3	1199	5	4

TABLE 6
Analysis of Variance of European American Women Achievers at "Less Selective" Institutions

Groups	Doctorate Results			Who's Who Results		
	N	Mean	SD	Rank	N	Mean
Predominantly White Women's (Wc PW)	49	74.54	53.18	1	17	4.66
Predominantly White Women's Change (Wch PW)	57	40.71	30.92	2	11	4.03
Predominantly White Coeducational (Coed PW)	556	21.41	18.92	3	154	0.72
Predominantly White Men's Change (Mch PW)	18	21.39	20.16	4	2	1.04
Doctorate results: $F = 79.5840^{***}$ $n = 680$						
Doctorate Tukey's HSD results:						
Wc PW significantly (*) different from all other groups						
Wch PW significantly (*) different from Coed PW and Mch PW						
Who's Who Results: $F = 33.2834^{***}$ $n = 184$						
Who's Who Tukey's HSD results:						
Wc PW significantly (*) different from Coed PW and Mch PW						
Wch PW significantly (*) different from Coed PW						

* $p < 0.05$. *** $p < 0.0001$.

degrees between 1975 and 1991 were eligible for inclusion in this study. Two hundred and fifty (250) institutions met these criteria. These institutions accounted for 83% of the African American women who earned doctorates between 1975 and 1991. The remaining 17% earned their bachelor's degrees from institutions outside the United States or from institutions that graduated fewer than 5 African American women who earned doctorates. The 250 eligible institutions awarded 4,399 bachelor's degrees to African American women who subsequently earned doctorates. Table 7 demonstrates some important demographic information about the 250 eligible institutions.

Data were also collected on the number of African American women listed in the 1992–1993 edition of *Who's Who Among Black Americans* (Brelín, 1992). Only data on African American women who earned

TABLE 7
Descriptive Statistics of Baccalaureate Institutions for African American Women

	Eligible Doctorates ^a	Eligible <i>Who's Who</i> ^b	"Top 10" Institutions ^c
INSTITUTIONAL TYPE			
Historically black women's	1%	1%	15%
Historically black coeducational	27%	28%	77%
Predominantly white women's	5%	5%	8%
Predominantly white women's change	2%	1%	0%
Predominantly white coeducational	63%	63%	0%
Predominantly white men's change	2%	2%	0%
INSTITUTIONAL CONTROL			
Public	61%	59%	15%
Private	39%	41%	85%
ENROLLMENT DATA			
Mean enrollment	7,883	7,971	1,846
CARNEGIE CLASSIFICATIONS			
Research I	22%	23%	8%
Research II	8%	8%	0%
Doctoral I	11%	9%	0%
Doctoral II	6%	7%	0%
Comprehensive I	27%	26%	22%
Comprehensive II	8%	8%	0%
Liberal Arts I	6%	7%	8%
Liberal Arts II	12%	12%	62%
INSTITUTIONAL SELECTIVITY			
Mean selectivity	3.1	3.2	2.7

^aPercentages represent data on the 250 institutions that graduated at least 5 African American women since 1965 who earned doctorates.

^bPercentages represent data on the 211 institutions that graduated at least 5 African American women since 1965 listed in the 1992–1993 edition of *Who's Who Among Black Americans*.

^cPercentages represent data on the 13 institutions listed in the "top ten" lists for African American women

bachelor's degrees since 1965 were included in the analysis. This analysis yielded a subpopulation of 211 institutions responsible for awarding 1,604 bachelor's degrees to African American women listed in *Who's Who Among Black Americans* (Brelín, 1992). This population of institutions was similar in composition to the total population of 250 institutions. Refer to Table 7 for demographic information on this subpopulation.

Table 2 lists the "top ten" baccalaureate-granting institutions for African American women who earned doctorates or who were listed in *Who's Who Among Black Americans* (Brelín, 1992). These "top ten" lists include institutions ranked by the value of their productivity ratios. There were 13 institutions included on the "top ten" lists. The characteristics of these institutions are different from those of the total eligible population (Table 7). Specifically, historically black institutions — both single sex and coeducational — are overrepresented among the "top ten" lists, whereas predominantly white institutions are underrepresented. Compared to the population of eligible institutions there is a higher percentage of private institutions among the "top ten" institutions. Further, the average selectivity of the "top ten" institutions is less than the average for the total population (2.7 compared to 3.1 on a 6-point scale). The "top ten" institutions have smaller undergraduate enrollments than the population of eligible institutions. Finally, compared to the Carnegie Classification distribution in the total eligible population, Liberal Arts II Colleges were overrepresented and Research I Universities were underrepresented among the institutions listed in the "top ten" tables.

Two one-way analyses of variance were conducted for African American women comparing mean productivity ratios for historically black women's colleges (Wc HBCU), historically black coeducational institutions (Coed HBCU), predominantly white women's colleges (Wc PW), predominantly white women's change colleges (Wch PW), predominantly white coeducational institutions (Coed PW), and predominantly white men's change colleges (Mch PW) (Table 8). Both analyses yielded statistically significant *F*-ratios ($p < 0.0001$). Compared to other institutional types, historically black women's colleges produced the largest proportion of successful African American women in both analyses. The productivity ratios for historically black women's colleges were up to 47 times greater than the ratios for predominantly white coeducational institutions. Further, the productivity ratio means for historically black women's colleges were up to 6 times greater than the means for historically black coeducational institutions and up to 10 times greater than were the means for predominantly white women's colleges. In fact, in both analyses, the mean productivity ratio for the historically black

TABLE 8									
Analysis of Variance of African American Women Achievers									
Groups	Doctorate Results				Who's Who Results				Rank
	N	Mean	SD	Rank	N	Mean	SD	Rank	
Historically black women's (Wc HBCU)	2	78.32	17.83	1	2	29.81	6.76	1	1
Historically black coeducational (Coed HBCU)	65	14.14	11.93	2	60	4.84	5.89	2	2
Predominantly white women's (Wc PW)	12	7.51	3.08	3	11	3.84	2.85	3	3
Predominantly white women's change (Wch PW)	5	4.03	1.84	4	2	1.24	0.26	5	5
Predominantly white coeducational (Coed PW)	155	1.68	1.92	6	131	0.86	1.16	6	6
Predominantly white men's change (Mch PW)	5	3.15	1.39	5	5	1.30	0.49	4	4
Doctorate results: $F = 83.4281$ *** $n = 244$									
Doctorate Tukey's HSD results:									
Wc HBCU significantly (*) different from all other groups									
Coed HBCU significantly (*) different from Coed PW, Mch PW, Wch PW & Wc PW									
Wc PW significantly (*) different from Coed PW									
Who's Who results: $F = 38.4039$ *** $n = 211$									
Who's Who Tukey's HSD results:									
Wc HBCU significantly (*) different from all other groups									
Coed HBCU significantly (*) different from Coed PW									

* $p < 0.05$. *** $p < 0.0001$.

women's colleges was significantly higher than the means for all other institutional types.

Historically black coeducational institutions yielded the second highest productivity ratios in both analyses. For the doctoral analysis, these institutions had a significantly higher mean than did predominantly white institutional types regardless of their institutional gender. For the *Who's Who* analysis, only historically black coeducational institutions were significantly more productive than their coeducational, predominantly white counterparts.

Predominantly white women's colleges were the third most productive institutional type in both analyses. These institutions had a significantly higher mean than the historically coeducational institutions in the doctoral analysis. The mean for the predominantly white women's colleges was not significantly greater than the means for other institutional types in the *Who's Who* analysis. In both analyses, predominantly white coeducational institutions had the lowest mean productivity ratios.

Two stepwise multiple regressions were conducted to predict PhD and *Who's Who* productivity ratios. Independent variables for each regression were: institutional gender, institutional race, institutional control, institutional selectivity, mean enrollment, and mean enrollment of African American women. The results of the stepwise multiple regression analyses yielded comparable results. Both analyses, for example, yielded statistically significant regression equations ($p < 0.0001$). Table 9 displays the results of these regression analyses. There were only three variables that were significant predictors of African American women's post-baccalaureate success. In order of significance these variables were: institutional race, institutional gender and institutional control. The direction of the betas indicated that *historically black institutions, women's colleges, and private institutions* were more likely to graduate successful African American women. Interestingly, neither institutional selectivity

TABLE 9
Regression of African American Women Achievers

Variable	Doctorate Results	<i>Who's Who</i> Results
	Beta*	Beta*
Institutional race	0.5714	0.4519
Institutional gender	0.2452	0.2682
Institutional control	0.2234	0.2557
Doctorate results: Multiple $R = 0.6830$; Adjusted R Square = 0.4598; $n = 241$; $F = 69.9373^{***}$		
<i>Who's Who</i> results: Multiple $R = .6025$; Adjusted R Square = 0.3537; $n = 208$; $F = 39.3162^{***}$		

*All betas significant at the $p < 0.05$ level. *** $p < 0.0001$.

nor mean enrollment nor the mean number of African American women were significant predictors of success for African American women.

Latinas

One hundred and thirty-one (131) baccalaureate-granting institutions awarded bachelor's degrees to at least 5 Latinas since 1965 who subsequently received doctoral degrees between 1975 and 1991. Refer to Table 10 for demographic information on the eligible population of institutions. These 131 institutions accounted for 74% of the Latinas who earned doctorates between 1975 and 1991. The remaining 26% received their bachelor's degrees from institutions outside the United States or from institutions that had graduated fewer than 5 Latinas with doctorates. In real numbers, this population of institutions granted 1,666 bach-

TABLE 10
Descriptive Statistics of Baccalaureate Institutions for Latinas

	Eligible Doctorates ^a	Eligible <i>Who's Who</i> ^b	"Top 10" Institutions ^c
INSTITUTIONAL TYPE			
Hispanic-serving women's change	2%	3%	25%
Hispanic-serving coeducational	9%	11%	33%
Predominantly white women's	4%	4%	25%
Predominantly white women's change	2%	1%	0%
Predominantly white coeducational	78%	76%	17%
Predominantly white men's change	5%	5%	0%
INSTITUTIONAL CONTROL			
Public	65%	70%	33%
Private	35%	30%	67%
ENROLLMENT DATA			
Mean enrollment	10,820	11,748	3,036
CARNEGIE CLASSIFICATIONS			
Research I	34%	36%	8%
Research II	12%	11%	0%
Doctoral I	12%	13%	8%
Doctoral II	5%	4%	0%
Comprehensive I	27%	28%	34%
Comprehensive II	3%	3%	17%
Liberal Arts I	6%	5%	25%
Liberal Arts II	1%	0%	8%
INSTITUTIONAL SELECTIVITY			
Mean selectivity	3.7	3.6	3.3

^aPercentages represent data on the 131 institutions that graduated at least 5 Latinas since 1965 who earned doctorates.

^bPercentages represent data on the 112 institutions that graduated at least 5 Latinas since 1965 who were listed in the 1992-1993 edition of *Who's Who Among Hispanic Americans*.

^cPercentages represent data on the 12 institutions listed in the "top ten" lists for Latinas.

elor's degrees to Latinas who later earned doctorates. According to sources at the Doctorate Records File (1993), however, the number of Latinas who earned doctorates between 1975 and 1991 is higher than the 1,666 used in this study. Between 1975 and 1976, the "Hispanic" category on the Doctorate Records File Questionnaire included only Puerto Ricans and Mexican Americans. To put the underrepresentation into perspective, the Doctorate Records File (1993) claims that "other" Latinas currently constitute 44% of all doctorates granted to Latinas in the United States. Because the Doctorate Records File Questionnaire asks respondents to self-identify their race and ethnicity, I presumed that in 1975 and 1976, Latinas who were neither Puerto Rican nor Mexican American identified themselves as "other." It is possible that some of these individuals identified themselves as "Caucasian." In 1977, the Doctorate Records File adequately broadened the definition of Latinas in their survey.

The researcher also collected data on the number of Latinas who earned bachelor's degrees since 1965 who were listed in the 1992–1993 edition of *Who's Who Among Hispanic Americans* (Unterburger, 1993). A subpopulation of 112 eligible institutions awarded 628 undergraduate degrees to Latina's listed in this *Who's Who* book. This subpopulation was similar in composition to the total population of 131 institutions.

Table 2 lists the names and institutional characteristics of the 12 "top ten" baccalaureate-granting institutions for Latinas who earned doctorates and who were listed in the 1992–1993 edition of *Who's Who Among Hispanic Americans*. Again, the institutional characteristics of these colleges and universities were different from the characteristics of the total population of 131 institutions (Table 10). Hispanic-serving women's change colleges, Hispanic-serving coeducational institutions, and predominantly white women's colleges, for example, are overrepresented among the "top ten" institutions. Compared to the total eligible population, there is a higher proportion of private institutions among the "top ten." Finally, the institutions in the "top ten" are slightly more selective and have smaller enrollments than the institutions in the eligible population. In terms of Carnegie Classifications, there was very little consistency across the 12 institutions appearing in the "top ten" lists.

Before comparing the relative success of institutional types for Latinas, it is important to remember that there are six institutional categories relevant to Latinas. Specifically, Latinas in this analysis attended Hispanic-serving women's change colleges (Wch HACU), Hispanic-serving coeducational institutions (Coed HACU), predominantly white women's colleges (Wc PW), predominantly white women's change col-

leges (Wch PW), predominantly white coeducational colleges and universities (Coed PW), and predominantly white men's change colleges. There are currently no Hispanic-serving women's institutions. Two one-way analyses of variance were computed to compare the mean institutional productivity of these six institutional types for Latinas (Table 11).

Both analyses yielded statistically significant F -ratios ($p < 0.0001$). Both analyses yielded the same pattern: Hispanic-serving women's change colleges were the most productive institutional type, followed, in order, by predominantly white women's colleges, Hispanic-serving coeducational institutions, predominantly white women's change institutions, predominantly white men's change institutions, and predominantly white coeducational institutions. In both analyses, the mean productivity of Hispanic-serving women's change colleges was significantly higher than the means for all other institutional types. In the doctoral analysis, the mean for predominantly white women's colleges was significantly greater than the means for both predominantly white coeducational institutions and predominantly white men's change colleges. Further, in the *Who's Who* analysis, the mean productivity for predominantly white women's colleges was significantly greater than the mean for predominantly white coeducational institutions. Hispanic-serving coeducational institutions, the third most productive institutional type for Latinas, had a significantly higher doctorate productivity mean than did their predominantly white coeducational counterparts. Further, the coeducational Hispanic-serving institutions had a significantly higher mean *Who's Who* productivity than did both predominantly white coeducational and predominantly white men's change colleges.

Two stepwise multiple regressions were conducted to predict which institutional characteristics are the best predictors of doctoral productivity and *Who's Who* productivity for Latinas. The results, displayed in Table 12, demonstrate that both equations were statistically significant ($p < 0.0001$). In both analyses, institutional race was the best predictor of Latina post-baccalaureate achievement. Institutional gender was the second best predictor and institutional control was the third best predictor for both equations. The direction of the betas indicated that *women's colleges, Hispanic-serving colleges and universities, and private institutions* were more likely to graduate successful Latinas. Interestingly, in the regression equation predicting total *Who's Who* productivity, institutional selectivity was a negative predictor. In other words, Latinas who attended less selective institutions were more likely to be listed in *Who's Who Among Hispanic Americans* than those who attended more selective institutions.

TABLE 11
Analysis of Variance of Latina Achievers

Groups	Doctorate Results				Who's Who Results			
	N	Mean	SD	Rank	N	Mean	SD	Rank
Hispanic-serving women's change (Wch HACU)	3	14.86	6.23	1	3	6.98	2.76	1
Hispanic-serving coeducational (Coed HACU)	12	3.34	1.53	2	12	2.04	1.12	3
Predominantly white women's (Wc PW)	5	5.41	1.87	3	4	2.07	1.55	2
Predominantly white women's change (Wch PW)	3	3.07	0.98	4	1	0.87	—	4
Predominantly white coeducational (Coed PW)	100	1.27	1.01	6	86	0.46	0.59	6
Predominantly white men's change (Mch PW)	6	1.94	1.30	5	6	0.83	0.49	5
Doctorate results: $F = 68.3738$ *** $n = 128$								
Doctorate Tukey's HSD results:								
Wch HACU significantly (*) different from all other groups								
Wc PW significantly (*) different from Coed PW and Mch PW								
Coed HACU significantly (*) different from Coed PW								
Who's Who results: $F = 47.4356$ *** $n = 112$								
Who's Who Tukey's HSD results:								
Wch HACU significantly (*) different from all other groups								
Coed HACU significantly (*) different from Coed PW and Mch PW								
Wc PW significantly (*) different from Coed PW								

* $p < 0.05$. *** $p < 0.0001$.

TABLE 12
Regression of Latina Achievers

Variable	Doctorate Results	Who's Who Results
	Beta*	Beta*
Institutional race	0.4796	0.5630
Institutional gender	0.3814	0.3128
Institutional control	0.3415	0.2940
Institutional selectivity		-0.1563
Doctorate results: Multiple $R = 0.7427$; Adjusted R Square = 0.5408; $n = 126$; $F = 51.2472^{***}$		
Who's Who results: Multiple $R = 0.7497$; Adjusted R Square = 0.5499; $n = 108$; $F = 46.1979^{***}$		

*All betas significant at the $p < 0.05$ level. *** $p < 0.0001$.

Discussion

The results of this study reconfirm, update, and expand the findings of other baccalaureate origin studies and address many of the criticisms leveled against previous studies of this type. Conducting separate analyses for women of different racial and ethnic groups leads to important insights. Examining Table 2, for example, reveals that there is little overlap among successful institutions between the groups of women. For the most part, institutions successful with one group of women are not as successful with other groups. This finding is important given that previous research has concluded that predominantly white women's colleges are the most productive institutions for women, undifferentiated by race/ethnicity, who have either earned doctorates, been admitted to medical school, or been listed in a *Who's Who* book. Despite the apparent differences between the most productive institutions for the three groups of women, there is an important similarity worth noting. Specifically, if one carefully examines the lists of most successful institutions for each group, one cannot help noticing that selective, predominantly white, co-educational institutions are not included. Given that the institutions most credited by the public for "success" are the research universities and the prestigious Ivy League institutions, their absence among the successful institutions identified in this study is notable. This phenomenon is revisited later in this article.

In the analysis of European American women achievers, the results of the present study indicate that women's colleges continue to be important contributors to post-baccalaureate success as defined in this study. Regardless of the measure of success used (i.e., doctorates and *Who's Who* achievers), women's colleges consistently graduated significantly higher proportions of successful European American women than did coeducational institutions.

The consistency of the present findings about European American women's success addresses one of the more prevalent critiques against previous research. Specifically, critics have argued that the reason that women's colleges were successful in the past was that the most prestigious institutions in the country were not open to women and therefore women's colleges were the only educational option available to high-achieving women. In other words, these critiques attribute previous findings to the period studied rather than to the institutions themselves. However, because the present study examines the baccalaureate origins of European American women who graduated since the late 1960s, after many men's colleges had become coeducational, the critique becomes moot.

Despite the fact that Tidball conducted separate analyses for both selective and less selective institutions in her previous studies (1973, 1974, 1980), one of the major criticism of baccalaureate origin studies is that they fail to account for differences in the selectivity of women's versus coeducational institutions. As such, because the present study also conducted separate analyses for "less selective" institutions, it offers another answer to these critiques. Specifically, regardless of institutional selectivity, the present study found that predominantly white women's colleges were more productive of successful European American women than were coeducational institutions. As such, these findings support Tidball's previous findings when she conducted separate analyses for institutions of differing selectivity (Tidball, 1973, 1974, 1980).

For African American women, the results of the present study also are consistent with previous findings. In the present study, historically black colleges are significantly more productive of successful African American women than are predominantly white institutions. By combining race and gender, however, this study highlights a new finding. Specifically, this study found that historically black women's colleges outproduced not only the coeducational and single-sex predominantly white institutions, but also the historically black coeducational ones. Further, for African American women, the predominantly white women's colleges were more productive than coeducational predominantly white institutions. From these results one can conclude that both institutional gender and institutional race are important factors.

Another new finding offered by the present study has to do with the baccalaureate origins of successful Latinas. In accord with its findings for African American women, the present study found that both the gender and the race of the institution are important factors to consider in determining the most productive baccalaureate institutions for successful Latinas. Specifically, Hispanic-serving women's change colleges signif-

icantly outproduced all other institutional types in graduating successful Latinas. Further, predominantly white coeducational institutions graduated the smallest proportion of Latinas. Again, both the institutional gender and the institutional race were important factors in determining which institutional types were most successful for Latinas.

Along with comparing the productivity of various institutional types for the three groups of women, the present study also examined which institutional factors were predictive of successful institutions. This type of analysis addresses another of the major criticism of previous baccalaureate origin studies, the failure to control for student background characteristics (Crosby et al., 1994; Giele, 1987; Stoecker & Pascarella, 1991). Admittedly, this is a difficult problem to remedy because the unit of analysis in baccalaureate origin studies is the institution rather than the achievers themselves. Previously, Tidball has argued that because the baccalaureate origin studies begin with students who have already graduated, the graduation itself serves as a proxy for student background characteristics. Specifically, she argues that graduation from college indicates that students are capable academically, have sufficient resources, and also equivalent motivation (Tidball correspondence, 1995). Despite Tidball's assertion, it is also possible to use institutional characteristics — such as institutional selectivity — as a proxy for student characteristics.

The results of these analyses for the European American women were striking in their consistency. Institutional gender was the best predictor of institutional success. Institutional selectivity, mean enrollment, and institutional control were also significant predictors of the baccalaureate origins of European American women. In other words, single-sex, more selective, smaller, private institutions were associated with institutions that graduated the largest proportions of successful European American women. It is important to highlight that institutional selectivity was less significant than institutional gender in the analyses conducted for European American women. This result directly contradicts the conclusions drawn by Crosby et al. (1994), who conducted a secondary analysis of Tidball's research and stated that institutional selectivity mitigates the predictive effects of institutional gender.

Interestingly, the results of similar analyses conducted for both African American women and Latinas indicated that institutional race and institutional gender, in that order, were consistently the most predictive indicators of success. As with the analyses based on European American women, other significant predictors included institutional size and institutional control. In contrast to the results found for European American women, however, in the regression analyses conducted for African American women institutional selectivity was not a significant

predictor of institutional success. Further, for the Latinas, selectivity was a significant negative predictor of institutional success. In other words, for the Latinas the more selective the institution, the less likely it was to graduate a large proportion of successful Latina alumnae. These findings for ethnic/racial minority women are striking given that institutional selectivity is often equated with institutional success.

Potential Limitations of the Study

There were several methodological limitations of this study worth mentioning. The most important limitation is that during the time of the study (1965 to 1991), a number of colleges and universities changed institutional types. In particular, several men's and women's colleges became coeducational during the period being studied. Although these institutions have been designated as men's or women's change colleges, their change of status has a potential impact on the conclusions drawn from this study. This is particularly true of the men's change colleges that did not begin admitting women until the middle 1970s. Although the changing status of these institutions during the period under analysis creates an interesting dilemma, there is some evidence that the results would not radically change even if one "corrected" for the fact that these institutions did not enroll women during the entire period under analysis.

Because men's change institutions are at a potential disadvantage relative to other institutional types in terms of the total period analyses, separate analyses were conducted looking at only those who earned undergraduate degrees after 1975. By this time, many of the men's change colleges were approaching equal representation of women in their undergraduate enrollments. In these "late period" analyses for African American women and Latinas, men's change colleges fared no better than they did in the total period. For the analysis of European American women, however, the men's change colleges were the second highest producers of PhDs during the late period analysis, while they were either last or second to last for the total period analyses. Thus, when these institutions became coeducational is an issue worthy of serious consideration when analyzing the findings of the present study — at least for the European American women. More specific data on the "late period" analyses can be obtained from the author, as can a list of when men's change and women's change institutions became coeducational.

That different institutions and different institutional types may attract unique types of students is, in part, beyond the control of this study. Though the present analysis did control for institutional selectivity, there is no way to ascertain whether other, more qualitative differences exist between those who attend special focus institutions and those who enroll

in more mainstream institutions. Maybe there is something inherent in women who choose to attend special focus institutions that predispose them to be successful. For example, maybe women who attend women's colleges are more dedicated to academic achievement than women who opt for coeducational institutions. Astin (1962), for example, has insisted for a long time that controlling for the incoming characteristics of students is important in interpreting institutional differences in output of PhDs. Although I believe that institutional selectivity serves as a sufficient proxy in dealing with the issues associated with student self-selection, the truth remains that self-selection of institutional type is an issue that is beyond the control of baccalaureate origin studies. While self-selection does not invalidate the present findings, it is an issue worthy of consideration.

Implications

The results of this study suggest several important implications for researchers, policymakers, and the public. For researchers, this study reminds us how crucial it is to conduct separate analyses for people of different racial and ethnic groups. Previous research on the baccalaureate origins of women, for example, generated conclusions primarily applicable to European American women because the number of European American women with doctorates was so much greater than the numbers of doctorates held by women from other racial and ethnic groups. Using disaggregated data one can more readily acknowledge the contribution of other types of institutions, such as historically black women's colleges and Hispanic-serving women's change colleges, and acknowledge important differences between groups. This study demonstrates that results based on women as a monolithic category may obscure important differences between groups.

At the very least, the results of this study argue for the continued existence of special focus colleges as both educational options for students and as potential templates for other institutions to emulate. At best, however, this study suggests that researchers, institutions, and the public redefine which institutions they consider most successful and therefore reevaluate which institutions deserve credit and support. How is success currently defined? For the most part, the American public equates post-secondary success with institutional prestige, which is based primarily on the availability of financial resources, the presence of student selectivity characteristics, and on research productivity (Astin, 1987, 1992). In other words, success is ordinarily defined not by looking at what institutions do for their students. Similarly, too often success is defined not by looking at how institutions use their resources, but by valuing the

mere possession of institutional resources. As a result of using these "input-oriented" definitions of success, many of the "successful" institutions highlighted in this study — women's colleges, historically black colleges, and Hispanic-serving institutions — receive substantially less support than more prestigious institutions. In fact, many of the "successful" institutions identified in this study are greatly underfunded.

The present study hopes to communicate to those who control the funds and to those who influence public perception that different measures of institutional success should be recognized and valued. Results of this study indicate that institutional prestige, as measured by selectivity, is not the best means of predicting certain measures of post-baccalaureate success for women. Instead, what this study does is recognize and call attention to institutions and institutional types that rarely get the credit they deserve. This study concludes that some special focus institutions, which have relatively few resources and not much prestige, are worthy of more accolades and material support than they have received in the past because of their ability to disproportionately graduate women who have achieved a measurable degree of success:

This study also offers young women and their parents a broader range of factors to consider when choosing where to attend college. Results of this study suggest that perhaps an African American woman might be better served by a historically black women's college than a predominantly white, coeducational university. Certainly the results suggest that she would not necessarily be limiting her chances of success if she decided to attend a historically black college. In this vein, high-achieving European American women might be better served by selecting a predominantly white women's college rather than a coeducational institution. Similarly, motivated Latinas might benefit from attending a Hispanic-serving institution rather than a predominantly white institution. I do not mean to imply that merely attending a particular institution or a particular type of institution assures someone's success. Rather, the institutional rankings created in this study suggest that attending a special focus institution will not hinder one's success and may indeed provide a supportive environment conducive to personal growth.

The public needs to become aware of the academic research that supports the contributions of these institutions. Over the past few years, the women's colleges, through the Women's College Coalition, have done an excellent job of marketing the idea that women's colleges are associated with success. As a result of this marketing, the number of applicants at women's colleges has increased. What is interesting about the "marketing blitz" for women's colleges, however, is the backlash that it has created. It is clear from reading the array of articles on women's colleges

in the popular press that many people are uncomfortable with the idea that separate education may be better for women than coeducation. The majority of articles, even those that present research findings demonstrating that women's colleges are associated with positive outcomes, nonetheless conclude that coeducational institutions are actually better for women than single-sex institutions. Pundits argue, for example, that people could use the information about women's colleges in a way that might hurt the status of women (Estrich, 1994; Talbot, 1994). Specifically, they argue that if one believes that women should attend women's colleges, it somehow implies that women are different or inferior to men. Others argue that women who attend single sex institutions do not learn to deal with men and are therefore less ready to compete and function in the "real world." Interestingly, many of the critics of the data on women's colleges are women themselves. Proponents of minority-serving institutions have not had to deal with this type of backlash, in part because they have been less aggressive than the women's colleges in openly touting and marketing evidence of their success.

Though there is no single answer that can quell everyone's concerns about "segregated" or "separate" versus "desegregated" or "integrated" education, this study offers some perspectives on this issue. Specifically, the public must understand that just because special focus institutions lead to positive outcomes for their students does not mean that all institutions should dedicate themselves exclusively to a particular group. Special focus colleges and universities should be maintained as educational options, as should mainstream, coeducational institutions. Just because one recognizes and values the accomplishments of special focus institutions does not mean that there is not a place in the academic landscape for more traditional educational options.

Crediting the successes of special focus institutions should not result in women or minorities being labeled as "different," "inferior," or "in need of special attention." In fact, because the unit of analysis in baccalaureate origin studies is the institution rather than the individual, it would be wholly inaccurate to conclude that the results are about the abilities or needs of particular groups of students. Instead, baccalaureate origin studies look at whether institutions are inhibiting or encouraging their students' post-baccalaureate success. Conclusions drawn from baccalaureate origin studies, therefore, highlight the existence of potential problems associated with mainstream, coeducational institutions. For example, African American women may not achieve at predominantly white coeducational institutions because the women are deficient, but because the institution does not have sufficient role models or a critical mass of African American students. Whatever the reason, an institution's

ability to facilitate the success of its students is based on an interaction between institution and the student rather than only on individual student characteristics. In addition, it may be that what “works” for women and racial/ethnic minorities at special focus institutions would also be beneficial to European American men. Perhaps every student, even those in the majority, would benefit from the lessons offered by special focus institutions.

In response to those who say that separate education is “unnatural” and therefore insufficient, the studies on special focus institutions suggest that sometimes putting students in an “unnatural” environment is just what they might need to eventually deal successfully with the “real world.” Unnatural or not, the present study demonstrates that special focus colleges and universities — predominantly white women’s colleges, historically black women’s and coeducational institutions, and Hispanic-serving institutions — graduate disproportionate numbers of women who earn doctorates and who are listed in *Who’s Who* books. These institutions produce higher proportions of successful women than comparable predominantly white, coeducational institutions.

The present study suggests that college is a time when students who feel on the margin may flourish in safe, protective environments where they feel supported, where they feel welcome, and where there are others around who look like them. Perhaps the reason that special focus institutions are successful is because they are removed from the “real world” and are places in which students can develop skills and self-confidence and prepare themselves internally to deal with and succeed in the “real world.” Maybe one day we will not need special focus institutions. Maybe predominantly white, coeducational colleges and universities will have devised better methods of serving the needs of all of their students. For now, however, the evidence overwhelmingly supports the idea that “a room of one’s own” has a positive influence on the educational achievements of European American women, African American women, and Latinas.

APPENDIX A

Use of Different Denominators

In this study the mean undergraduate enrollment of the various baccalaureate-granting institutions was used as the primary denominator for the productivity ratios. Three other measures — mean enrollment of women and mean enrollment of either African American women or Latinas — were used as secondary denominators.¹ Results using these secondary denominators are presented in this Appendix along with a discussion about what these denominators signify.

When mean enrollment is the denominator, the productivity ratios indicate how many women *per unit of 1,000 students* achieved "success." This denominator takes into account the mean number of persons that attended an institution; it ignores the proportion and number of women and number of ethnic/racial minority students. Of the three denominators, mean enrollment is the best proxy for institutional size. Using the mean number of women as the denominator makes it more difficult for institutions with larger proportions of women (i.e., women's colleges and women's change colleges) to have high productivity ratios. At the same time, however, because most coeducational institutions have at least a 50% enrollment of women, one would still expect the results using mean enrollment of women to be somewhat similar to those found using mean enrollment. The issue is further complicated by the use of a third denominator — the mean number of either Latinas or African American women enrolled at an institution. When these measures are used as denominators, the productivity ratios indicate how many Latinas *per unit of 1,000 Latinas* eventually were successful or how many African American women *per 1,000 African American women* were successful. Because of the relatively poor representation of women of color at most colleges and universities in the country, using the mean number of women of color as denominators provides vastly different results than using the other two denominators. Unlike women (undifferentiated by ethnicity), who are generally 50% of the undergraduate population at most institutions, the proportion of women of color can vary from less than 1% to 100%. Because of these variations, the mean number of women of color is not an accurate proxy for institutional size. The use of the mean number of women of color as a denominator tends to reward selective institutions that "play it safe" and admit relatively small numbers of women of color who have strong high-school achievement records.

Summary Comparing Mean Enrollment and Mean Enrollment of Women

Results of analyses using either mean enrollment or mean enrollment of women yield fairly similar results within the three groups of women studied. Results of the one-way analyses of variance using both denominators, for example, demonstrate that predominantly white coeducational institutions are the least productive institutions (Table A1). Using either denominator for the European American women, women's colleges outproduced coeducational institutions. Similarly, for the African American women, using either denominator, Historically black women's colleges produced the highest proportion of successful African American women. For the Latinas, using either denominator, Hispanic-serving women's change colleges consistently had the highest mean productivity ratios. Based on the regression results, for all three groups of women institutional race and institutional gender continued to be important factors in determining the success rate of institutional types when both mean enrollment and mean enrollment of women served as denominators (Table A2). However, the regression results using mean enrollment of women indicated that the role of institutional gender in predicting institutional success is less significant than it had been in analyses using mean enrollment as the denominator. This was the case for all three groups. As with the results found using mean enrollment as the denominator, however, results using mean enrollment of women support the continued importance of institutional race for African American and

TABLE A1

Analysis of Variance with Mean Enrollment of Women Denominator (doctoral attainment)

	European American Rank	African American Rank	Latina Rank
Pred. white women's	1	3	3
Pred. white women's change	3	5	5
Pred. white coeducational	4	6	6
Pred. white men's change	2	4	4
Hist. black women's	—	1	—
Hist. black coeducational	—	2	—
Hispanic women's change	—	—	1
Hispanic coeducational	—	—	2

European American results: $F = 8.6991^{***}$ $n = 761$

European American Tukey's HSD results:

Wc PW significantly (*) different from Coed PW and Wch PW

African American results: $F = 44.7337^{***}$ $n = 244$

African American Tukey's HSD results:

Wc HBCU significantly (*) different from all other groups

Coed HBCU significantly (*) different from Coed PW, Mch PW, Wch PW & Wc PW

Latina results: $F = 27.8780^{***}$ $n = 129$

Latina Tukey's HSD results:

Wch HACU significantly (*) different from all other groups

Coed HACU significantly (*) different from Coed PW

* $p < 0.05$. *** $p < 0.0001$.

TABLE A2

Regressions with Mean Enrollment of Women Denominator (doctoral attainment)

Variable	European American Results Beta*	African American Results Beta*	Latina Results Beta*
Institutional control	0.1437	0.2725	0.3037
Institutional gender	0.1363		0.1275
Institutional race		0.5963	0.5439
Institutional selectivity	0.4726		

European American results: Multiple $R = 0.5922$; Adjusted R Square = 0.3464; $n = 758$; $F = 81.5544^{***}$ African American results: Multiple $R = 0.6820$; Adjusted R Square = 0.4607; $n = 242$; $F = 104.8091^{***}$ Latina results: Multiple $R = 0.7571$; Adjusted R Square = 0.5595; $n = 125$; $F = 41.6439^{***}$ *All betas significant at the $p < 0.05$ level. *** $p < 0.0001$.

Latina women and the predictive power of institutional selectivity for European American women.

Summary Comparing Mean Enrollment and Mean Enrollment of Women of Color

Using mean number of women of color as the denominator yielded results for the Latinas and African American women that closely resembled the results for European American women using mean enrollment as the denominator. Pre-

dominantly white women's colleges were the most productive institutions for both African American and Latina women when women of color served as the denominator (Table A3). For both groups of women the coeducational minority-serving institutions yielded the smallest productivity ratios. The results of the regression equations using women of color as the denominator indicate that institutional selectivity and institutional control were the best predictors of successful institutions for both African American and Latina women (Table A4). Institutional selectivity was a positive predictor of success, which stands in direct opposition to results found using the other denominators. Another striking difference found when using women of color as the denominator is that institutional race was not a significant predictor of institutional success.

TABLE A3

Analysis of Variance with Mean Enrollment of Women of Color Denominator (doctoral attainment)

	African American Rank	Latina Rank
Pred. white women's	1	1
Pred. white women's change	5	2
Pred. white coeducational	4	4
Pred. white men's change	2	3
Hist. black women's	3	—
Hist. black coeducational	6	—
Hispanic women's change	—	5
Hispanic coeducational	—	6

African American results: $F = 10.7557^{***}$ $n = 241$

African American Tukey's HSD results:

Wc PW significantly (*) different from Coed PW, Coed HBCU, and Wch PW

Mch PW significantly (*) different from Coed HBCU and Coed PW

Latina results: $F = 1.9077^*$ $n = 129$

Latina Tukey's HSD results:

No two groups significantly different at the 0.05 level

* $p < 0.05$. *** $p < 0.0001$.

TABLE A4

Regressions with Mean Enrollment of Women of Color Denominator (doctoral attainment)

Variable	African American Results Beta*	Latina Results Beta*
Institutional control	0.2915	0.2780
Institutional gender	0.2051	
Institutional selectivity	0.4642	0.2233

African American results: Multiple $R = 0.6884$; Adjusted R Square = 0.4673; $n = 240$; $F = 72.0676^{***}$
 Latina results: Multiple $R = 0.5329$; Adjusted R Square = 0.2668; $n = 127$; $F = 16.5220^{***}$

*All betas significant at the $p < 0.05$ level. *** $p < 0.0001$.

Notes

¹Data for the secondary denominators come from the same place as data for the primary denominator — the survey of colleges and universities conducted biannually by the Federal Office of Civil Rights. Though the survey began in 1966, the Office of Civil Rights failed to collect accurate data on the number of women by race and ethnicity attending particular institutions until 1974. The mean number of women and mean number of women of color per institution were computed from surveys conducted in 1974, 1978, 1982, and 1986.

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The Normative Structure of Community College Teaching

A Marker of Professionalism

Although community college faculty are regarded as an identifiable occupational group (Cohen & Brawer, 1972, 1977, 1996; Palmer, 1992), the extent to which they are considered a professionalized group poses a long-standing and nettlesome problem to scholars. The pervasiveness of this enduring question has manifested itself in the commentary of Arthur M. Cohen and Florence B. Brawer, two eminent scholars of the community college, over the past twenty-five years. In 1972 Cohen and Brawer raised the issue of the professional maturity of two-year college instructors and found it wanting. Five years later Cohen and Brawer (1977) asserted that community college faculty are members of an occupational grouping in an incipient stage of professionalization. In 1996 Cohen and Brawer assessed community college faculty as being "more nearly teachers than members of a teaching profession" (p. 96).

Cohen (1973) and Cohen and Brawer (1996) contend that the evolution of community college faculty as a profession should be organized around the discipline of instruction. Cohen (1973) posits that instruction is an organized body of knowledge and skill. Palmer (1992) agrees with

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Cohen (1973) and Cohen and Brawer (1996), when he asserts that a pedagogical frame of reference must be internalized in community college faculty as a necessary condition for professionalization.

In addition to the pedagogical frame of reference, Palmer (1992) argues that the professionalization of community college faculty also depends on an internalization of three other frames of reference: the institutional frame, the scholastic frame, and the classroom research frame. The institutional frame refers to an internalization of the comprehensive mission of the community college and the acceptance of its open-door admissions policy. The scholastic frame requires the performance of disciplinary-based scholarly activities by community college faculty. Such scholarly activities, however, need not require traditional original research. The performance of classroom-based research to improve one's own teaching and student learning embodies the classroom research frame of reference proposed by Palmer.

However, sociologists of the professions offer additional perspectives on "traits" that accord status as a profession to an occupational group. Occupational groups vary in their possession of these traits or characteristics (Vollmer & Mills, 1966). Put differently, the degree to which an occupational group is professionalized depends on how many of these characteristics it exhibits (Carr-Saunders & Wilson, 1933; Barber, 1963; Millerson, 1964; Greenwood, 1957; Harries-Jenkins, 1970; Moore, 1970). These defining characteristics include an extensive period of training and socialization, the possession of a systematic body of theory, the formation of professional associations, and the existence of a code of conduct.

Nevertheless, Goode (1969) contends that the core generating traits of professionalism are: the mastery and control of a basic body of abstract knowledge and the ideal of service to clients. According to this functionalist perspective on the professions, these core traits legitimize claims to professional status by occupational groups (Goode, 1969).¹

Formal and informal social control mechanisms are necessary to assure that the role performance of individual professionals adheres to the ideal of service (Goode, 1957; Bucher and Strauss, 1961; Braxton, 1986; Braxton, Bayer, & Finkelstein, 1992). Such social control mechanisms define appropriate and inappropriate behavior with respect to clients and assure adherence to the ideal of service (Goode, 1957).

However, though postsecondary faculty organizations, such as the AAUP and most disciplinary organizations to which academics belong, have codes of conduct, such codes scarcely provide prescriptions or proscriptions for teaching-related behavior (Brown & Krager, 1985). Similarly, neither do most postsecondary institutions provide a codification of norms and sanctions pertaining to the teaching role.

The exception here is the issue of sexual harassment. The federal government requires institutions that receive federal funds to have policies and procedures regarding sexual harassment as well as mechanisms to address research misconduct. In these cases, definitional terms and procedures have been codified by postsecondary institutions and by many professional associations through their codes of conduct. Moreover, substantial research has been prompted on these topics. In contrast, it appears that when there is little governmental prescription, as in regard to teaching performance, for example, little research is conducted on the topic, and there are only informal policies, which are not guided by explicit statements in professional association codes of conduct or in policies and procedures documents of postsecondary institutions.

Thus, there is no binding formal code of conduct for community college faculty. Consequently, informal social control mechanisms are necessary to assure that professional role performance adheres to the ideal of service. Because norms are prescribed and proscribed patterns of behavior (Merton, 1942, 1968, 1973), they function as mechanisms of informal social control. Hence, the existence of a normative structure for community college teaching would serve as one marker of the degree to which community college faculty are professionalized.

However, what little empirical or qualitative research has been done on teaching norms held by the professoriate has been based largely on faculty at baccalaureate-granting institutions (Tabachnick, Keith-Spiegel, & Pope, 1991) or research I universities and comprehensive colleges and universities II (Braxton, Bayer, & Finkelstein, 1992; Boice, 1996; Braxton, Eimers, & Bayer, 1996). The missions of such institutions vary from those of community colleges. Research I universities are principally oriented toward research, whereas comprehensive colleges and universities are dually oriented toward teaching and research (McGee, 1971; Finnegan, 1993). In contrast, community colleges solely emphasize lower-division teaching (Carnegie Foundation, 1987). The mission of a college or university strongly influences institutional structures, which in turn, influence professional role performance (Ruscio, 1987). Put differently, the academic life of faculty varies by institutional type (Blackburn & Lawrence, 1995; Light, 1974). Consequently, teaching norms espoused by community college faculty may differ from those espoused by faculty in research I universities and comprehensive colleges and universities-II. Thus, this piece of research addresses the question: Does a normative structure for community college teaching exist?

If a normative structure exists for community college teaching, then the extent to which normative patterns comprising this structure are espoused by community college faculty may be influenced by social and

personal sources of social control. Social sources of influence on norm espousal include the community, institutions, and primary groups (Reiss, 1951). For professions, community controls are exerted through the community of the profession (Goode, 1957). Academic disciplines comprise such a community for faculty in community colleges. Thus, membership in an academic discipline represents a social source of influence on the espousal of teaching norms by community college faculty. The espousal of teaching norms may vary across different academic disciplines, because dissimilarities among academic disciplines are "profound and extensive" across professional activities, ranging from the level of the academic discipline to the level of the individual faculty member (Braxton & Hargens, 1996). Such dissimilarities are between disciplines of hard and soft paradigmatic development. Paradigmatic development pertains to the degree of agreement in a discipline on its theoretical orientation, appropriate research methods, and the importance of research questions to the discipline (Kuhn, 1962; Lodahl & Gordon, 1972; Biglan, 1973).

Personal controls include demographic and career faculty characteristics. These personal controls may influence the extent to which faculty espouse teaching norms. More specifically, two demographic characteristics — gender and age — have been shown to be generally related to various career performance criteria (Blackburn & Lawrence, 1995) and more specifically to some teaching improprieties (Tabachnick, Keith-Spiegel, & Pope, 1991).

Two career faculty characteristics are also sources of personal control. The first is highest degree level. Extended graduate education through the doctoral degree may provide early socialization experience into the various professional roles, including teaching, and hence offer greater commitment to normative standards in teaching performance. Conversely, however, doctoral training may emphasize research and hence diminish the importance of teaching and its associated performance standards.

✓ The second career-based personal source of control addresses whether or not the faculty member had formerly or presently assumed academic administration duties as either a dean or department program head/chair. It is possible that those who have held such positions have more likely encountered teaching improprieties and have had to deal with them. Consequently, they may have more crystallized perceptions of proper teaching conduct and stronger opinions of what degree of administrative intervention should be exercised for various improprieties.

Because little or no research has focused on the influence of such social and personal controls on the espousal of teaching norms by commu-

nity college faculty, our research asks: What influence does academic discipline (hard and soft paradigmatic development), gender, age, highest earned degree held, and administrative experience have on the espousal of community college teaching norms by the faculty of such collegiate institutions?

Research Design

Sampling

A two-stage sampling design was employed to address the research questions of this study. All 1366 institutions listed as two-year colleges by the Carnegie Foundation (1987) were included in the population. From this list, 137 institutions were randomly selected. A microfiche copy of the most current (1993–95) catalog/bulletin was obtained for each selected institution. In the second stage, individual faculty members were selected from these institutions.

Selection of faculty was based on disciplinary affiliation. Using the Biglan (1973) classification scheme of academic subject matter areas, we selected faculty from four fields: hard-life (biology), hard-nonlife (mathematics), soft-life (psychology), and soft-nonlife (history). From the catalogs of the randomly selected institutions, all faculty members clearly in one of these four disciplines was noted for possible inclusion in the sample of faculty. Because the number of faculty associated with each of these fields varies, sampling continued until the least-occurring discipline reached 200. When part-time or adjunct faculty could be distinguished in the college catalog, they were excluded from the sample. Those individuals who were identified in the other three fields in the 137 institutions were then randomly selected such that 200 were retained in each discipline. This yielded a total sample size of 800 individuals who were typically permanent faculty and unlikely to be part-time or adjunct faculty members.

In the fall of 1994, a survey was mailed to each of the 800 sampled individuals at their institutional addresses. After an initial mailing, a postcard reminder, and a second mailing of the survey instrument to prior nonrespondents, a total of 265 useable replies were received. Thus, a response rate of 33.1% was realized.

Consistent with the sampling design, the number of respondents were about equally distributed in the four discipline areas. Almost two-thirds (65%) did not hold a doctorate. Slightly more than one-third (34%) of respondents were women. See Table 2 for additional personal and professional characteristics exhibited by this sample of respondents.

The obtained sample appears to be representative of the population

from which it was drawn. Respondents to the first mailing wave were compared to respondents to the second mailing wave on their level of espousal of each of the five normative patterns identified (which are described later). T-tests comparing these two groups yielded statistically nonsignificant differences for each of the five normative behavioral patterns. Thus, no bias appears to exist in this sample. This method of determining the representativeness of a sample is consistent with an approach delineated by Goode and Hatt (1952) and Leslie (1972).

Survey Instrument

The data collection instrument, the "Community College Teaching Behaviors Inventory (CCTBI)," closely parallels similar instruments designed and used by the researchers for earlier surveys of faculty at research universities, comprehensive universities and colleges, and four-year liberal arts colleges. The instrument included some career and personal background items together with 126 specific items classified *a priori* into eight categories of teaching behaviors. These categories were: Preplanning for the Course (14 behaviors), First Day of Class (14 behaviors), In-Class Behaviors (21 behaviors), Treating Course Context (9 behaviors), Examination and Grading Practices (25 behaviors), Faculty-Student In-Class Interactions (9 behaviors), Relationships with Colleagues Regarding Teaching (16 behaviors), and Out-of-Class Practices (18 behaviors).

The specific behaviors comprising the CCTBI were obtained from literature on the ethics of college teaching (Baumgarten, 1982; Robertson & Grant, 1982; Schurr, 1982; Scriven, 1982; Wilson, 1982) and from parallels to Merton's four research-oriented norms of science (Merton, 1942; 1973) and also included behaviors suggested by a panel of 23 experts on college teaching.²

The specific teaching behaviors subsumed under each category were *negatively* worded so as to cast each behavior in the form of a violation of possible preferred conduct. This approach is consistent with the general principle addressed by Durkheim (1934) that norms are best identified by the severity of individuals' responses when they are violated.

Community college faculty members were asked to indicate their opinion on each specific behavior as it might ideally apply to a faculty member teaching a community college course in his or her field of about 40 enrolled students regardless of whether the individual taught such a course her- or himself. To indicate their reactions to each behavior, the following response categories were provided: (1) appropriate behavior, should be encouraged, (2) discretionary behavior, neither particularly appropriate nor inappropriate, (3) mildly inappropriate behavior, gener-

ally to be ignored, (4) inappropriate behavior, to be handled informally by colleagues or administrators suggesting change or improvement, and (5) very inappropriate behavior, requiring formal administrative intervention. Through these reactions, the types of sanctions individuals believe should be appropriated for deviance are assessed. Actual experiences are not ascertained, nor are actual encounters with deviance necessary in order to endorse normative standards. Thus, the perceptions of faculty regarding these behaviors are assessed. Only those behaviors for which the mean value on this scale was 4.00 or higher were delineated as being norms.

Analytical Procedures

The means and standard deviations for the 126 teaching-related behaviors included in the inventory were calculated. More than one-quarter (29%) of these behaviors met the criterion of 4.00 or higher. Factor analysis was then conducted using these defined normative items in order to determine whether a normative structure for community college faculty exists. The approach used at this stage was principle components analysis with varimax rotation.

Hierarchical multiple linear regression was the statistical technique used to assess the influence of academic discipline, gender, age, highest earned degree held, and administrative experience on faculty espousal of the normative behavioral patterns identified through principal components analysis. Rather than chronological age, however, we used professional age (years since highest degree), because this provides a better proxy for career experience. We derived a series of three dummy variables for analysis from the four disciplines from which the community college faculty members were chosen: biology (1 = biologist, 0 = other), history (1 = historian, 0 = other), and psychology (1 = psychologist, 0 = other).

Highest earned degree and administrative experience were also measured as dummy variables. Highest earned degree held took the form: less than doctorate = 0 and doctorate-holder = 1. Administrative experience was assessed using the following dichotomy: faculty indicating that they have been a dean or department chair or are currently a dean or a department chair = 1, and individuals indicating that they have never been a department chair or a dean = 0.

Findings

In the preliminary analysis of responses to each statement, 36 behaviors met the criterion of 4.00 or higher on the sanctioning actions scale. That is, of the 126 specific items in the CCTBI, these particular behav-

iors are viewed by a preponderance of survey respondents as requiring intervention by others to attempt to rectify faculty behavior considered to be inappropriate.

The concern community college faculty hold for the welfare of students as clients is indexed in comparisons to research and comprehensive university faculties on the number of negative teaching behaviors perceived as substantially inappropriate. In a parallel survey of faculty in senior universities, only 25 behaviors were rated by faculty members at 4.00 or higher (Braxton, Bayer, & Finkelstein, 1992).

However, the violation of norms perceived to be of the greatest impropriety and meriting especially strong formal administrative intervention are the same for both groups of faculty members. Among community college faculty, the highest level of impropriety was assigned to an instructor who frequently attends class while obviously intoxicated (mean = 4.96). Following this norm are two norms that proscribe making suggestive sexual comments about a student (mean = 4.85) and having a sexual relationship with a student enrolled in an instructor's class (mean = 4.84). The summary statistics on these and the other behaviors meeting the criterion of 4.00 or higher in severity are shown in Table 1.

Factor Analysis

To determine whether these 36 proscribed behaviors comprise a normative structure, factor analysis was conducted to derive a set of factors that could account for the covariation among the 36 specific behaviors. That is, a factor analysis was conducted to ascertain the underlying pattern of meaning of the proscriptions for these 36 specific norms. The scree test is used to arrive at the number of factors to be extracted and rotated. A five-factor solution was determined by this procedure, with the rotated factor structure accounting for 48.2% of the variance. The proportion of variance explained by each factor is exhibited in Table 1. Additionally, Table 1 shows the factor loadings of the specific norms for each of the five factors as well as the Cronbach alpha estimates of internal consistency reliability computed for each of the factors (range = 0.63 to 0.85). Thus, a normative structure for community college teaching comprised of five normative behavioral patterns was identified.

The first factor or normative pattern is named Interpersonal Disregard. The behaviors included in this pattern of norms suggest a disregard for the feelings and opinions of both students and colleagues. Restrictive Accessibility is the label given to the second factor. The first three items in this set are refusal to participate in curricular planning, routine late arrival to teach class, and not keeping scheduled office hours. The third configuration of norms is designated Inadequate Planning. The prohibited

TABLE 1

Summary Statistics and Factor Analysis Results for Items Loading Over 0.40 for Five Teaching Norms Patterns

Normative Pattern/ Items	Mean	SD	Loading
<i>Interpersonal Disregard</i>			
The instructor expresses impatience with a slower learner in class.	4.04	0.72	0.711
An instructor makes condescending remarks to a student in class.	4.28	0.70	0.650
A faculty member criticizes the academic performance of a student in front of other students.	4.34	0.70	0.633
An advisee is treated in a condescending manner.	4.10	0.68	0.626
A faculty member makes negative comments about a colleague in public before students.	4.50	0.63	0.563
Students are not permitted to express viewpoints different from those of the instructor.	4.14	0.89	0.549
The instructor practices poor personal hygiene and regularly has offensive body odor.	4.34	0.71	0.538
The standards for a course are set so high that most of the class receives failing grades for the course.	4.14	0.91	0.498
A faculty member's involvement in scholarship is so great that he/she fails to adequately prepare for class.	4.30	0.64	0.484
A faculty member neglects to send a letter of recommendation that they had agreed to write.	4.21	0.70	0.427
The final course grade is based on a single course assignment or a single examination.	4.12	0.94	0.411
Percent Explained Variance = 4.70			
Chronbach Alpha = 0.81			
<i>Restrictive Accessibility</i>			
A faculty member refuses to participate in departmental curricular planning.	4.00	0.87	0.649
The instructor is routinely late for class meetings.	4.23	0.71	0.592
Office hours scheduled for student appointments are frequently not kept.	4.31	0.66	0.574
A cynical attitude toward the role of teaching is expressed by an instructor.	4.00	0.94	0.554
The instructor frequently introduces opinion on religious, political or social issues clearly outside the realm of the course topics.	4.03	0.93	0.534
The instructor does not follow the course outline or syllabus for most of the course.	4.05	0.79	0.501
Class is usually dismissed early.	4.26	0.80	0.456
Instructions and requirements for course assignments are not clearly described to students.	4.11	0.69	0.436
Percent Explained Variance = 3.90			
Chronbach Alpha = 0.70			
<i>Inadequate Planning</i>			
The instructor changes class meeting time without consulting students.	4.69	0.65	0.713
A course outline or syllabus is not prepared for a course.	4.26	0.92	0.690
A course outline or syllabus is not passed out to students on the first of day of class.	4.09	0.97	0.686
The instructor changes classroom location to another building without informing students in advance.	4.42	0.78	0.637

TABLE 1 (Continued)

Normative Pattern/ Items	Mean	SD	Loading
Students are not informed of the instructor's policy on missed or make-up examinations.	4.24	0.69	0.621
Required texts and other reading materials are not routinely ordered by the instructor in time to be available for the first class session.	4.33	0.91	0.543
Office hours are not communicated to the students.	4.05	0.78	0.535
Percent Explained Variance = 29.60			
Chronbach Alpha = 0.85			
<i>Particularistic Grading</i>			
Social, personal, or other nonacademic characteristics of students are taken into account in the awarding of student grades.	4.39	0.84	0.751
The instructor allows personal friendships with a student to intrude on the objective grading of their work.	4.58	0.58	0.698
Individual students are offered extra-credit work in order to improve their final course grade after the term is completed.	4.46	0.90	0.511
Stated policies about late work and incompletes are not universally applied to all students.	4.15	0.84	0.482
An instructor lowers course standards in order to be popular with students.	4.40	0.65	0.419
Percent Explained Variance = 6.30			
Chronbach Alpha = 0.82			
<i>Moral Turpitude</i>			
A faculty member has a sexual relationship with a student enrolled in the course.	4.84	0.47	0.711
A faculty member makes suggestive sexual comments to a student enrolled in the course.	4.85	0.43	0.505
Though able to conduct class, the instructor frequently attends class while obviously intoxicated.	4.96	0.21	0.493
Individual student course evaluations, where students can be identified, are read prior to the determination of final course grades.	4.53	0.76	0.433
Percent Explained Variance = 3.70			
Chronbach Alpha = 0.63			

NOTE: Sample size varies between 261 and 265 cases for the statistics, due to missing response data on some items.

behaviors associated with this pattern of norms deal with inattention to detail in such matters as changing class meeting times and classroom location, not having timely preparation of a syllabus and not communicating routine "housekeeping" information to students, and not ordering required texts and materials in time for the beginning of the academic term.

The fourth factor is labeled *Particularistic Grading*. This configuration of norms prescribes that the assessment of student academic performance and the awarding of grades should be both fair and according to merit. The last factor is designated as *Moral Turpitude*, where behaviors

such as having a sexual relationship with one's student, making suggestive sexual comments to one's student, and attending class while intoxicated have high factor loadings.

These five proscribed normative behavioral patterns clearly relate to the welfare of students as clients of teaching role performance. If community college faculty engage in any of these patterns of behavior, the ability of students to learn course content is either indirectly or directly harmed. These behaviors would also likely yield corrective interventive actions from colleagues or administrators.

Moreover, four of these five factors closely parallel the findings derived from the opinions of senior college faculty members. This former analysis (Braxton, Bayer, & Finkelstein, 1992) showed similar items clustering for the factors of Interpersonal Disregard, Inadequate Planning, Particularistic Grading, and Moral Turpitude. This analysis shows that, among community college faculty members, there is an additional set of proscriptive norms regarding Restrictive Accessibility of faculty. Apparently, those faculty in institutions that emphasize writing and research publication are more tolerant of faculty inaccessibility, which may be detrimental to the teaching role but enhances the opportunity for performing these other roles.

Personal and Social Sources of Influence

With these five normative behavioral patterns established, we turn our attention to the question: What influence does the academic discipline (hard and soft paradigmatic development), gender, age, highest earned degree held, and administrative experience of community college faculty have on their espousal of each of the five normative arrays: Interpersonal Disregard, Restrictive Accessibility, Inadequate Planning, Particularistic Grading, and Moral Turpitude?

Summary statistics, showing the mean and standard deviation on each factor score for each of the background and career variables, are shown in Table 2.

In general, these descriptive data show small differences. However, women subscribe to stronger sanctions for norms violations than do men. Doctorate-holders among community college faculty members also tend to subscribe to slightly stronger sanctions for misconduct.

For the four academic disciplines covered in the survey, it appears that those in the "hard" sciences tend to take more stringent positions on the normative patterns than do those in the "soft" fields. This is especially the case for the biologists in the sample. On each of the five factors, biologists score a higher mean value than do those in any of the other three academic disciplines.

Personal and Professional Background Variables	Percentage Distribution in Sample	Teaching Norms Patterns									
		Interpersonal Disregard		Restrictive Accessibility		Inadequate Planning		Particularistic Grading		Moral Turpitude	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<i>Gender</i>											
Male	65.9%	4.20	0.48	4.10	0.53	4.30	0.59	4.36	0.54	4.68	0.38
Female	34.1%	4.31	0.46	4.17	0.52	4.30	0.51	4.46	0.47	4.76	0.34
<i>Highest Degree</i>											
Doctorate	35.5%	4.26	0.49	4.14	0.56	4.35	0.49	4.42	0.53	4.70	0.41
Less than doctorate	64.5%	4.22	0.47	4.12	0.52	4.27	0.60	4.38	0.52	4.71	0.35
<i>Academic Discipline</i>											
History	24.3%	4.16	0.49	4.06	0.52	4.26	0.67	4.37	0.55	4.64	0.44
Psychology	27.1%	4.23	0.45	4.07	0.52	4.29	0.57	4.30	0.57	4.66	0.37
Mathematics	22.7%	4.20	0.54	4.08	0.54	4.25	0.56	4.42	0.50	4.77	0.28
Biology	25.9%	4.38	0.42	4.34	0.49	4.40	0.47	4.56	0.41	4.81	0.25
<i>Professional Age</i>											
Highest degree after 1975	50.0%	4.25	0.50	4.12	0.56	4.33	0.51	4.48	0.52	4.71	0.38
Highest degree in 1975 or before	50.0%	4.22	0.46	4.13	0.50	4.27	0.62	4.31	0.51	4.70	0.36
<i>Administrative experience</i>											
Ever department chair/dean	37.3%	4.29	0.45	4.20	0.52	4.40	0.57	4.38	0.52	4.75	0.30
Never department chair/dean	62.7%	4.20	0.50	4.08	0.54	4.24	0.55	4.41	0.53	4.67	0.41

Finally, these descriptive data also show relatively small differences related to the two experience variables. However, community college faculty members who are younger (as measured by career age — years since receipt of the highest degree held) tend to assign slightly stronger sanctioning actions to most of the normative domains. In regard to administrative experience, those who have been a dean or departmental administrator subscribe to stronger proscriptive norms in four of the five domains.

To determine the independent influence of each of these social and personal sources of social control on norm espousal, these variables are also employed in separate multiple regression equations, where each of the five factors is the dependent variable. The results are shown in Table 3, and they parallel the bivariate results discussed above.

Gender affects, in a statistically reliable way, the desired sanctioning action for Interpersonal Disregard ($b = -0.179, p < 0.05$), Restrictive Accessibility ($b = -0.178, p < 0.05$), and Moral Turpitude ($b = -0.141, p < 0.05$). For each of these proscribed norms, male faculty members espouse less severe preferred sanctions.

Membership in the discipline of biology wields a positive influence on the severity of sanctions for Interpersonal Disregard ($b = 0.181, p < 0.05$) and Restrictive Accessibility ($b = 0.251, p < 0.05$). Put differently, community college faculty in high paradigmatic development disciplines are more likely to espouse a stronger desired sanction for violating these two norms than are faculty in the soft paradigmatic disciplines of history and psychology, net of the other personal and professional variables included in the regressions.

Moreover, professional experience also affects the severity of sanctioning action. Having had administrative experience significantly increases endorsement of strong sanctions for Inadequate Planning ($b = 0.164, p < 0.05$). Professional age negatively influences in a statistically

TABLE 3

Multiple Regression Results of Personal and Professional Variables Related to Five Teaching Norms Patterns

Normative Pattern	R^2	F -ratio	p -value
Interpersonal Disregard	0.065	2.097	< 0.05
Restrictive Accessibility	0.078	2.547	< 0.02
Inadequate Planning	0.035	1.113	n.s.
Particularistic Grading	0.106	3.580	< 0.01
Moral Turpitude	0.085	2.808	< 0.01

NOTE: Predictors that are dummy variables are gender, highest degree level (doctorate or not), academic discipline (three dummies), and administrative experience (ever been a chair/dean or not). The other predictor variable is professional age, a continuous variable calculated by subtracting year of highest degree from the survey year, 1994.

significant manner the severity of sanctions for Particularistic Grading ($b = -0.010, p < 0.05$).

However, in all cases, the R^2 is quite modest, although statistically significant. The highest R^2 , including all predictors, is only 0.106 (for Particularistic Grading). Consequently, the amount of explained variance for each of the five normative patterns can be described as quite small. Thus, it can be concluded — at least in regard to those personal and social sources of social control used here — that community college faculty are relatively homogeneous in their appraisal of teaching improprieties.

Discussion and Conclusion

We know little about the prevalence of malpractice in teaching. In fact, relatively little is known about what activities and behaviors of faculty members are generally deemed to be severe violations of teaching norms. Professional codes of conduct either ignore the teaching role or make only superficial statements and vague platitudes about teaching behavior expectations. In contrast, a substantial amount of literature exists on pedagogical methods, on conditions and practices that tend to optimize learning, and on circumstances and behaviors that enhance student evaluations of teaching. Boice (1996) makes a similar point in his research on “CI” (classroom incivilities) in postsecondary institutions. He notes that virtually all studies of CI have focused on students’ actions and assume that teachers do not commit CI, although his research clearly demonstrates that faculty members are the most crucial initiators of CI.

One example of the focus on students is the special issue of the *Journal of Higher Education* (May/June, 1982), titled “Ethics and the Academic Profession.” No empirical studies are presented, and almost all of the articles in this special issue address the teaching of ethics or debate the desirability and feasibility of a code of ethics for academics. The exception is an essay by Scriven (1982), which, although not research-based, addresses some improprieties of college faculty, particularly ethical malfeasance concerning testing and evaluation of student performance. Other works of this period that address professional teaching ethics of academics (Shils, 1984; Rich, 1984) also take a cautious approach and selective delineation of faculty behaviors that may be viewed as inappropriate.

More recently, writings on professional ethics in the teaching role of academics address a wider range of improprieties and advocate stronger statements regarding their severity (Cahn, 1994; Fisch, 1996; Markie, 1994; McKeachie, 1994; Whicker & Kronenfeld, 1994). Although, again, these works are not predicated on empirical research, they come closer than their

predecessor volumes from a decade earlier in advocating clear prescriptive and proscriptive behaviors appropriate to the teaching professoriate.

In this present article, we further explore teaching misconduct with particular emphasis on the normative structure and sanctions held by members of the teaching profession in community colleges. The existence of social control mechanisms which assure that members of an occupational group adhere to the ideal of service represents one significant marker of the extent to which an occupational group is professionalized (Goode, 1969). This study documents the existence of a normative structure for community college teaching. Five proscribed normative clusters comprise this normative structure: Interpersonal Disregard, Restrictive Accessibility, Inadequate Planning, Particularistic Grading, and Moral Turpitude. However, it does not address the extent to which community college faculty avoid these proscriptive normative patterns of behavior in their day-to-day teaching role performance.

Because a proscriptive normative structure for community college teaching exists, community college faculty are more professionalized, as determined by these indicators, than many scholars of the community college surmise. Moreover, these normative patterns are not greatly attenuated by social and personal characteristics of community college faculty.

Furthermore, the results reported herein demonstrate that community college faculty members hold particularly high standards regarding teaching performance and related behavior. Out of an inventory of 126 specific behaviors that may be deemed inappropriate, community college faculty judged 36 as requiring some interventive action. In contrast, only 25 of these same items met this criterion for faculty members in research universities and comprehensive colleges (Braxton, Bayer, & Finkelstein, 1992).

Although the extent to which community college faculty comply with the prescriptive form of these five normative clusters is unknown, the existence of a normative structure of proscribed teaching behaviors suggests that community college faculty largely parallel their counterparts in four-year colleges and universities. Thus, like higher education faculty elsewhere, community college faculty appear prepared to assume responsibility for the self-regulation of teaching role performance. Self-regulation also is another marker of professionalism given that society assumes that professions control the behavior of members so that the ideal of service to clients is maintained (Goode, 1969). Norms as mechanisms of social control provide the basis for such self-regulation. From this perspective, community college faculty are clearly professionalized.

Although the existence of a normative structure of community college teaching is a necessary condition for self-regulation of teaching role per-

formance by community college faculty, this normative structure must be buttressed by other processes of social control. Such a normative structure must influence the teaching behaviors of community college faculty. Also, mechanisms of deterrence, detection, and sanctioning of teaching improprieties (Zuckerman, 1977, 1988) must exist. Research such as is reported here may allow greater development of definitional parameters and sanctioning structure to emanate from the faculty itself. Further professionalization of community college faculty will not occur unless these mechanisms are firmly in place.

Future research should focus on these other processes of social control among community college faculty. It should also focus on existing processes employed in actual behavioral situations rather than in the perceptions of appropriate actions.

Moreover, the other core generating trait of professionalism needs development: the mastery and control of an abstract body of knowledge. Further professionalization of community college faculty depends on the development of an abstract body of knowledge for which community college faculty must exhibit mastery. As previously indicated, Cohen (1973) asserts that instruction is an organized body of knowledge and skill. Perhaps it is the discipline of instruction that provides the optimum organized body of knowledge and skill to satisfy this necessary condition for achieving professional status. The development of an identity and commitment to the discipline of instruction by community college faculty fits well with the high value placed on teaching role performance at community colleges (Blackburn & Lawrence, 1995).

Notes

¹Abbott (1988) identifies power theory and functionalism as two broad categories of theories on the professions. He contends that the power theories of Johnson (1972), Berlant (1975), and Larson (1977) seriously question the functionalist perspective that professions are self-regulating and worthy of trust by clients and the larger society. Because society expects professions to be self-regulating, the continued use of the functionalist perspective is warranted.

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Factors Associated with Student Loan Default Among Different Racial and Ethnic Groups

Introduction

This is the first study that uses a nationally representative data base of student loan borrowers to examine the similarities and differences among Whites, African Americans, and Hispanics. This is an important research and policy area because of the size of the loan default problem and the dominance of race as a correlate of loan repayment and default in other studies. The nation's student loan program is plagued by clashes among the competing values and goals of public subsidy, educational opportunity, cost effective investment, and institutional accountability (e.g., Hansen & Stampen, 1981; Volkwein & Szelest, 1995). This policy and value conflict remains unresolved (Hearn, 1993) and is amplified by a relative lack of empirical evidence to validate the policies and claims advanced by the various financial aid stakeholders.

For three decades, public investment in higher education has been directed at removing economic barriers to attend and to persist in college. This commitment to educational opportunity produced growth in stu-

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dent financial aid from \$557 million in 1963–64 to an astonishing \$50 billion in 1995–96 (College Board, 1996). Federal financial aid to college students has increasingly taken the form of publicly subsidized loans (Lewis, 1989). Since 1980 approximately half of all students who attend four-year colleges and more than 60% of students at proprietary schools borrowed at one point in their education (College Board, 1992). These loans must be repaid, and there is public concern about the alarming level of default rates. Knapp and Seaks (1992) have estimated that whereas federal loan volume grew by 58% during the 1980s, the dollar value of default claims grew by about 1200%, accounting for over a fifth of total program costs.

Annual student loan delinquency rates, averaging between 17 and 21% through the 1980s and early 1990s, compare unfavorably with other types of consumer loans where the annual delinquency rates since 1980 have ranged from 1.5% to 3.6% for various types of personal consumer credit and automobile loans (American Bankers Association, 1994), and from 4.6% to 5.8% for various types of home mortgages (Mortgage Bankers Association of America, 1994).

The higher loan default rates by racial minorities constitutes the most consistent and perhaps most troubling finding across the published studies that have appeared to date. Being African or Native American and coming from a family of little education are characteristics that have default rates generally ranging from 30% to 60%. However, none of these studies examines the extent to which the reasons for default behavior may vary by ethnic group. That is the task we undertake in this study.

Theoretical Perspectives

Our analyses and model development and variable selection incorporate five perspectives from the research literature. Drawing upon the literature on economic behavior, the first three perspectives reflect related theories of human capital, public subsidy, and the borrower's ability to pay; the fourth perspective is founded upon organizational structural/functional approaches; and the fifth incorporates student-institution-fit models from the literature on college outcomes.

Human capital theory emphasizes those variables that reflect an individual's willingness to invest in educational credentials and training that yield a greater return or higher financial compensation (Becker, 1964; Freeman, 1976). Citizens are motivated to pursue postsecondary credentials and training when the benefits outweigh the costs (Manski & Wise, 1983). The benefits include enhanced skills and higher earnings potential. The costs include not only the direct costs like tuition and living ex-

penses, but also the indirect costs of not working. Whereas the costs of higher education must be paid in the present, the benefits can be enjoyed only in the future. Because the economic benefits of education vary by levels of training and by career field, we should expect that loan repayment and default behavior will vary by highest degree earned and by major field of study (Cohn & Geske, 1990).

The related *theory of public subsidy* is directed most prominently at academically able but low-income students. Because students from low income families find it difficult to invest in college costs up front, public investment subsidizes these students, allowing the benefits to at least equal, if not exceed, the costs for them, as it does for youths whose parents have adequate finances (Cabrera, Stampen, & Hansen, 1990). Demonstrated financial need is the mechanism assuring that the subsidy reaches the target population (Stampen & Cabrera, 1986). Human capital and public subsidy perspectives also combine to support the nation's interest in educational opportunity — thus breaking the cycle of poverty for those at the bottom of the socioeconomic structure. This subsidy of educational opportunity is returned to society in the form of a more talented and productive workforce as well as in the form of higher earnings by individuals who contribute tax revenues and loan repayment. Those who complete their educational programs are more likely to contribute to the nation's economic and cultural productivity and to pay back the amount of the subsidy. Those who do not complete their programs are less likely to enjoy the expected earnings enhancement and should be expected to default more frequently on their loan obligations than those who do complete.

A third perspective, related to the first two, is the *ability to pay* model (Cabrera, Nora, & Castañeda, 1992; Cabrera, Stampen, & Hansen, 1990). This model assumes that the income levels of borrowers and their families exert substantial influences not only on college attendance but also on loan repayment behavior. This perspective causes researchers to give attention not only to the borrower's earnings, marital status, and family size but also to parental income, because those who find themselves in financial difficulty may be able to rely on their parents for financial assistance.

Structural/functional perspectives from the literature on organizations encourage researchers to give greater attention to those variables that reflect the influence of organizational structures (Hall, 1991). Studies of colleges and universities, as particular types of organizations, have shown that campus mission, size, wealth, and selectivity exert significant influences (ranging from small to large) on a variety of college outcomes including student values, aspirations, educational attainment, ca-

reer development, and earnings (Pascarella & Terenzini, 1991). Given the relationship between campus organizational characteristics and a variety of outcomes, some argue that the influence of these campus characteristics also extends to student borrower behavior (Volkwein & Szest, 1995).

Student-institution fit models explain the role of institutional and individual characteristics as influences on a variety of college student outcomes (Pascarella & Terenzini, 1991). Cabrera's integrated model of student retention (Cabrera, Castañeda, Nora, & Hengstler, 1992; Cabrera, Nora, & Castañeda, 1993) is especially valuable for increasing our understanding of the relationship among financial aid, family support, educational goals, academic integration, and academic achievement as influences on outcomes like persistence. Several authors have demonstrated that the concepts and measures in such student-institution-fit models can be applied to a variety of college outcomes (Pascarella & Terenzini, 1982; Terenzini, Theophildes, & Lorang, 1984; Terenzini & Wright, 1987; Volkwein, King, & Terenzini, 1986; Volkwein, 1991; Volkwein & Carbone, 1994). It is reasonable at least to hypothesize that these factors also play a role in postcollege behaviors, such as career success and loan repayment.

The Need for the Current Study

Despite the importance of this national problem, the literature contains few empirical studies and only one national data base of out-of-school borrowers — the 1987 National Postsecondary Student Aid Study (NPSAS-87). We found less than a dozen refereed journal articles that describe the characteristics of defaulters. All but two of the published studies are limited to a particular state or particular type of institution, or have other data limitations. Stockham and Hesseldenz (1979) analyzed a variety of academic, demographic, and personality data collected between 1971 and 1974 from a sample of 878 borrowers at a single institution in Kentucky. Myers and Siera (1980) developed a default model on a New Mexico State University population of 107 borrowers. Gray (1985) used a population of 328 at the University of Missouri to develop a logistic regression model. Wilms, Moore, and Bolus (1987) limited their study to a population of borrowers at proprietary schools and two-year colleges in the state of California. Greene (1989) studied 161 borrowers who received Perkins Loans from a school in North Carolina. In Texas, Lein, Rickards, and Webster (1993) compared 50 defaulters with 50 repayers among former vocational and proprietary students. A study by Knapp and Seaks (1992) examined borrowers in the

state of Pennsylvania at 26 public and private two- and four-year institutions. Mortenson (1989) examined national survey data, summarized American attitudes toward borrowing, and reviewed the findings from several earlier studies, but he himself did not present a new analysis of defaulters. Flint (1994) studied a cohort of borrowers at a multicampus two-year institution in Illinois.

The NPSAS-87 is the only national data base of postcollege borrowers. Although several publications have displayed descriptive statistics from NPSAS-87, only three analytical studies of borrowers have been published using NPSAS-87 data (Dynarski, 1994; Volkwein & Szelest, 1995; Flint, 1997). The Dynarski study develops logit default models on 4,750 NPSAS-87 borrowers who were within the first two years of leaving college. Volkwein and Szelest (1995) take the Dynarski analysis a step further by merging NPSAS with IPEDS and College Board data, thus allowing them to examine repayment and default behavior in relation to a variety of campus organizational measures as well as in relation to individual borrower characteristics. Their study developed logistic regression models on 4,007 pre-1984 out-of-school borrowers with complete transcript and survey data. The Flint study focuses on 1117 students who attended no more than one undergraduate institution and for whom complete transcript and survey data were available. The present study advances the other three NPSAS-87 studies, first by capturing 6,087 complete cases, and second by examining the results for each separate ethnic group.

The research literature suggests the importance of examining the determinants of college behaviors among ethnic groups. Astin (1982) found that minority group and socioeconomic status are significantly related to various educational outcomes. In particular, he found that the lower the family income, the lower the opportunities for minority students to perform well in college and to persist. Hearn (1984, 1991) examined the college destinations of a national sample and compared the role of ascriptive factors, like race, to the role of academic factors and socioeconomic factors, like high-school achievement and parental income. Olivas (1985) found that Hispanics are more reluctant to go into debt to finance their college education. Mortenson (1989) reports that Hispanics, women, and students from lower economic backgrounds are less likely to have positive attitudes toward borrowing. St. John and Noell (1989) compare the college attendance behavior of White, Black, and Hispanic students and document the importance of loans and other financial aid promoting college attendance by minorities. Several of the loan default studies have produced results that are consistent with those of Astin, Hearn, Mortenson, Olivas, and St. John. Wilms, Moore, and

Bolus (1987) in California, Knapp and Seaks (1992) in Pennsylvania, and Flint (1994) in Illinois found race to be significantly related to differences in default rates. An early study commissioned by the U.S. Office of Education (1978) found that being Black and from a low-income family are strong predictors of student loan default. More recently, the national studies by Dynarski (1994) and by Volkwein and Szelest (1995) reported that the ethnicity of the student is one of the main predictors of default and repayment behavior. These various studies suggest the need for assessing the effects of personal, institutional, and socioeconomic characteristics on default and repayment behavior among different ethnic groups. What are the causes and factors associated with loan default within each group?

Design of the Study and Methodology

Using the conceptual frameworks discussed above, this study examines the patterns of student loan default and repayment behavior among the various racial and ethnic groups represented in the National Postsecondary Student Aid Study. The data base contains over 11,000 nationally representative borrowers who began attending a higher education institution between 1973 and 1985 and who participated in the student loan program. NPSAS-87 contains data from the Student Loan Recipient Survey (SLRS) as well as transcript and financial information, but not all data are available for every case (a requirement for logistic regression analysis). We found relatively complete transcript and survey data on 6,338 out-of-school student aid recipients. This data base includes information about student personal, demographic, and family characteristics, data reflecting financial and occupational information, and academic records from college transcripts. The borrowers attended over 1,400 different institutions of higher education ranging from private for-profit institutions and community colleges to professional schools and research universities. Of the 6,338 "good cases" in our NPSAS-87 data set, 1,219 (19.2%) officially defaulted on their loans and 5,119 either paid in full or were in repayment with their loans in good standing. (A more detailed description of the NPSAS-87 population and methodology is available in the Users Manual [Knight, Mikros, Hunt, & Frankel, 1989]).

Multivariate Analysis

This study examines the effect of precollege, college, and postcollege characteristics on student loan default behavior. Using a series of logistic regression models, the Delta-p statistic is used to assess the marginal contribution of each predictor to the likelihood of loan default (Petersen,

1985; Cabrera, 1994). We selected logistic regression over ordinary least squares (OLS) and discriminant analysis, because logistic regression not only captures the probabilistic distribution embedded in dichotomous variables, but it also avoids violating assumptions of homogeneity of variance and functional specification that are likely with the direct application of OLS on dichotomous variables (Aldrich & Nelson, 1986; Cabrera, 1994; Feinberg, 1983; Hanusheck & Jackson, 1977). Because logistic regression is a nonparametric technique, it is also less likely to violate the assumption of multivariate distribution compared to both OLS and discriminant analysis. Furthermore, Press and Wilson (1978) demonstrated that logistic regression is a better procedure than discriminant analysis for both prediction and classification purposes. Moreover, the multivariate statistical procedures in this study are similar to those described in the other two published studies analyzing NAPSAS-87 data (Dynarski, 1994; Volkwein & Szelest, 1995).

We assembled descriptive statistics and conducted bivariate analyses for each of five populations: African Americans, Native Americans, Asians, Hispanics, and Whites. We selected variables on the basis of having theoretical relevance to at least one of the five branches of the research literature discussed above. The original list included measures of institution type, age, race, gender, parent's education and income, financial need, multiple aid sources, high-school preparation, college major and grades, institutions attended (transfer), educational degrees completed, postcollege occupational attainment and income, loan indebtedness, marital status, and number of dependent children.

The descriptive statistics and the bivariate analysis helped us select and make adjustments in the variables for the multivariate analysis. For example, we adjusted mother's education and father's education for the large number of single parent families by taking the highest of the two, and when one was missing, using the other. Because we found few differences in public versus private institution type, we combined them and instead differentiated by institutional mission (proprietary, two-year, four-year, university). We simplified the eight-category Biglan classification of majors into a science and technology dummy variable. We also simplified marital status by combining separated, divorced, and widowed into a single category. For those students who borrowed at more than one institution we used the institution type, grades, and major from the institution at which they received the bachelor's degree. If they received no bachelor's degree, we used the information from the most recent institution of full-time study. Because logistic regression requires complete data in every case, we dropped from the analysis a number of variables because of the number of missing cases (such as age and cur-

rent occupation), and we made adjustments in others. For example, some NPSAS cases were missing the college grade point average(GPA) so we assigned them the value of the mean for their particular group of degree holders. (Those with an associate degree and missing GPA were given the average GPA for all those with associate degrees, etc.)

Taking all these various steps we were able to generate 6,087 cases with full information for every variable that is used in the multivariate analysis and shown in Table 1. This is a more complete data set than was produced by either of the other three NPSAS-87 published studies (Dynarski, 1994; Volkwein & Szelest, 1995; Flint, 1997) and is close to the

TABLE 1
Variables Extracted from NPSAS-87 for the Regression Analysis

	N	Mean		N	Mean	Standard Deviation
VARIABLES REFLECTING HUMAN CAPITAL & PUBLIC SUBSIDY PERSPECTIVES			VARIABLES REFLECTING STRUCTURAL/FUNCTIONAL PERSPECTIVES			
<i>Race/Ethnicity</i>			<i>Institution Type</i>			
African American	754	0.12	Proprietary	1239	0.20	
Asian American	84	0.01	2-yr college	829	0.14	
Hispanic	162	0.03	4-yr college	1720	0.28	
Native American	46	0.01	Doctoral univ	2299	0.38	
White	5010	0.82				
<i>Female</i>	3047	0.50	VARIABLES REFLECTING STUDENT-INSTITUTION FIT			
<i>Parent Education</i>			<i>Transfer Status</i>	1819	0.30	
Less than high sch.	82	0.01	<i>College GPA</i>	6087	2.71	0.64
High-school grad	1732	0.28				
Less than 2 years	865	0.14	VARIABLES REFLECTING ABILITY TO PAY			
2 years college	675	0.11	<i>Parent Income</i>			
Completed college	1105	0.18	\$10,999 or less	2723	0.45	
Master's or PhD	884	0.15	\$11,000-\$16,999	514	0.08	
<i>High School Diploma</i>	5639	0.93	\$17,000-\$22,999	557	0.09	
<i>Education Finances</i>			\$23,000-\$29,999	697	0.11	
Grants/scholarships	1512	0.25	\$30,000-\$49,999	1046	0.17	
Work study	706	0.12	\$50,000 or more	550	0.09	
Work	2638	0.43	<i>Amount Borrowed</i>	6087	1548.63	1648.59
Family support	1994	0.33	<i>No. Depend. Children</i>	6087	0.54	1.11
<i>Science/Tech. Major</i>	2218	0.36	<i>Marital Status</i>			
<i>Earned Degrees</i>			Single	4244	0.70	
No degree	2240	0.37	Married	1347	0.23	
License/certificate	573	0.09	Separated/divorced	355	0.06	
Associates	406	0.07	<i>Gross Income (1,000s)</i>	6087	25.14	20.22
Bachelor's	2195	0.36				
Master's or PhD	673	0.11				

NOTE: Overall default rate = 19.2%

number achieved in Reischauer's study for the Congressional Budget Office (1991).

Weighted Versus Unweighted Populations

Social scientists often use weighting procedures to correct the data for response bias and to estimate the characteristics of the larger population from the sample at hand. NCES recommends the use of weights with NPSAS-87 because of disproportionate sampling on three variables (time period of loan, default status, and HEGIS vs. non-HEGIS institution type) (Knight, Mikros, Hunt, & Frankel, 1989). None of the other published NPSAS-87 studies has used the weights in their analyses, and one reviewer of this manuscript urged us to conduct ours using the pertinent weights.

The research literature suggests that the use of weights is appropriate in some instances, but not in others. The use of weights is especially recommended when the weights are applied to the key characteristics of the population and limited to univariate distributions (Astin & Molm, 1972; Dey, 1997). However, stratified sampling based on ethnicity was not used in creating the NPSAS-87 data base, and the weights affected only three other variables in Table 1. In addition, Rubin (1987), Pavel and Reiser (1991), and Dey (1997) suggest caution when using weighted procedures in multivariate analysis. In particular, Dey (1997) shows that, although weighting effectively reduces nonresponse bias in univariate distributions, the advantage of using weights in multivariate analysis is less clear. Several researchers have found only trivial differences between weighted and unweighted results (Pascarella, Brier, Smart, & Herzog, 1987, Pascarella, Ethington, & Smart, 1988). Even when individual variables are measurably disproportionate in the sample, their relationships with each other tend not to be (Astin & Panos, 1969; Dey, 1997).

In any case, we analyzed the data both ways. The unweighted analysis was carried out first, and the results appear below. When we re-analyzed the data using the weights recommended for NPSAS-87, several problems emerged. First, the weighted results increased the proportion of proprietary borrowers and lowered the two-year and four-year college borrowers accordingly. The two-year college group seemed especially underrepresented (weighted = 12%). Second, the weighted regression models largely replicated the unweighted ones, but due to the large number of cases (weighted $N = 7,555,433$), every coefficient in all four models became statistically significant, no matter how small. Third, some categories of borrowers in the weighted bivariate analysis showed a default rate of zero, even though the same groups in the unweighted analy-

sis have significant default rates. Thus, in the absence of compelling evidence for using the weighted analysis, we decided to use the more conservative, and more fathomable, unweighted approach employed by the other NPSAS-87 studies. (The results of the weighted analysis, not reported here, can be obtained from the first author.)

Results: Why Do Student Borrowers Default on Their Loans?

In the bivariate analysis we examined the default rates among selected populations of borrowers. Student precollege characteristics associated with low levels of loan default include being Asian American or White, having a college-educated parent, and coming from a family with income above \$30,000. On the other hand, being African American or American Indian, coming from a family of little education, and having a GED or no high-school diploma are characteristics that have default rates ranging from 33% to 56%. Among the college experience variables, the lowest default rates are associated with academic performance above 3.0, receiving transfer credit, and attending a doctorate-granting university. Attending a proprietary institution or earning low grades are characteristics that have high default rates (29% and 37%, respectively). Regarding the postcollege measures, the highest default rates are among those borrowers who left school with no degree, who have earnings under \$10,000, and who have dependent children. Having dependent children combined with being single, separated, divorced, or widowed produces default rates above 40%. The lowest default rates occur among those with bachelor's or graduate degrees, those with higher loan amounts (perhaps indicating more years of schooling and borrowing), and those with earnings above \$25,000. The default rates for these groups are largely, though not precisely, consistent with the findings in the other two NPSAS-87 studies (Dynarski, 1994; Volkwein & Szelest, 1995).

Using bivariate analysis, we also explored the interaction between institution type and race as a factor in default. Based on the literature, we expected to find that proprietary institutions would account for sizeable default rate differences among the racial/ethnic populations in the study. The graph in Figure 1, however, shows that Native Americans are the only group with significantly higher default rates as a consequence of proprietary school attendance. Among Whites, Blacks, and Hispanics there are no significant differences in the default rates of borrowers attending proprietary schools and accredited two-year colleges. Among Asians, the default rate is highest at two-year colleges. African and Native Americans have high default rates at all types of institutions, even at

four-year colleges and at universities. If institution type has an effect, it appears among both proprietary and two-year college borrowers, not proprietary alone. The majority of defaulters among Whites, Asians, and Hispanics are located at proprietary and accredited two-year institutions. In any case, default rates vary significantly both by institution type and by race, thus suggesting the need for research on each.

Policymakers and researchers alike are concerned about why it is that student borrowers default at such high levels. Table 2 shows the reasons

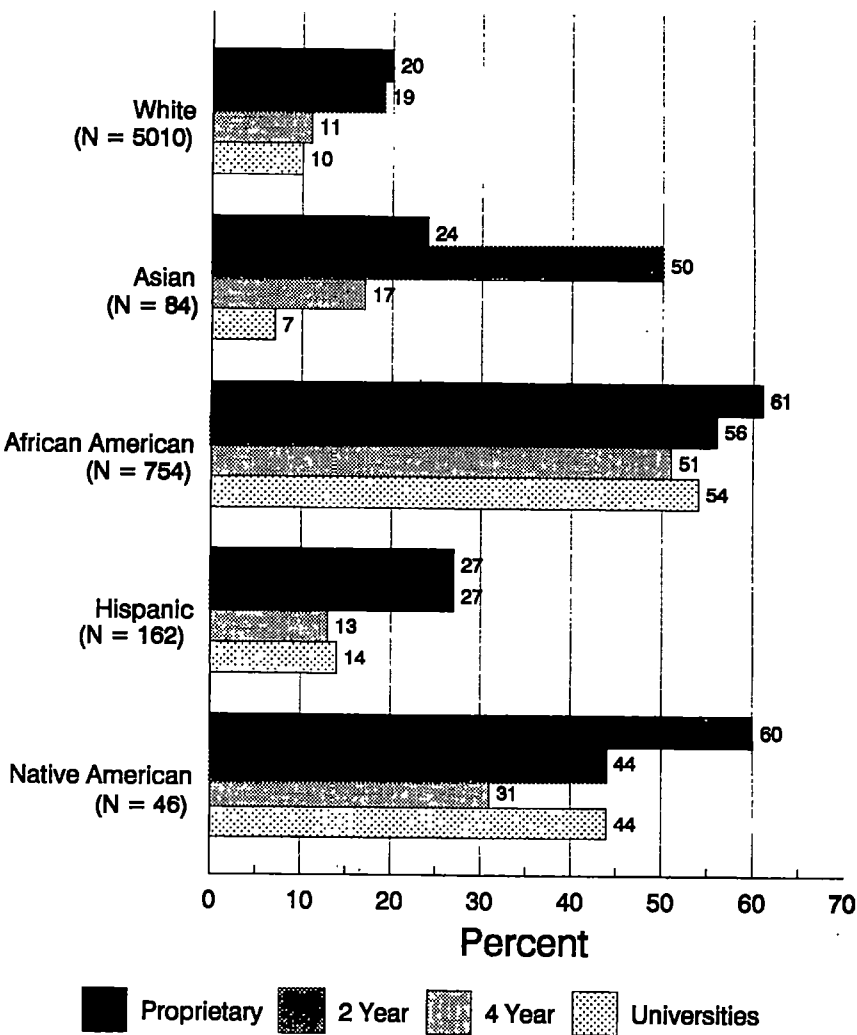


FIG. 1. Student Loan Default Rates by Racial Group and Institution Type

TABLE 2
Reasons for Default Reported by each Racial/Ethnic Group (N = 1191)

Reasons for Default Rated As "Very Important"	Total Sample	White	Asian	American Indian	Black	Hispanic	Level of Significant Diff. Among Groups
Unemployed and w/out income	58.9	52.7	33.3	54.5	70.3	70.3	***
Working but had insufficient funds for repayment	49.1	51.7	41.7	36.4	45.7	43.2	n/s
Repaying more import loans than GSL	20.7	21.3	41.7	27.3	19.1	10.8	*
Dissatisfied w/ educ. Program	12.0	9.2	0	9.1	17.6	13.5	**
Had interfering personal problems	32.7	27.6	8.3	31.8	41.1	54.1	***
Confused by repayment process	24.1	23.7	33.3	27.3	24.8	21.6	n/s
Didn't realize loan had to be repaid	7.2	5.5	0	9.1	10.3	10.8	n/s
Were you aware of deferment options (% Yes)	26.4	27.0	50.0	27.3	23.8	37.8	n/s
Begun making payments since default (% Yes)	66.0	72.5	91.7	54.5	54.0	62.2	***

* Significant at 0.05. **Significant at 0.01. ***Significant at 0.001. n/s = Not significant.

for default rated as "very important" on the NPSAS survey by the 1191 responding defaulters. These data have not been analyzed in other studies. We expected that the inability to pay would be the most obvious explanation for default, and this is confirmed by the large number indicating that the most important reasons for default are being unemployed (58.9%) and working at low wages (49.1%). Interfering personal problems (32.7%) is a distant third factor. Most students realize that the loan has to be repaid (93%), so ignorance and misinformation do not seem to be significant factors in loan default. However, one out of four (24.1%) is confused by the repayment process, and almost three out of four are not aware of loan deferment options as an alternative to default.

We find significant differences in the reasons for default reported by each ethnic group. African American and Hispanic defaulters are significantly more likely to be unemployed, to be dissatisfied with their educational programs, and to have personal problems that interfere with repayment. Whites and Asians are significantly more likely to report resuming loan repayment after default.

With the high level of student loan default, the resumption of payments after default is an important object of study. Two out of three defaulters (66%) report making payments since the default first occurred.

Figure 2 shows not only that 66% of defaulters have resumed payment, but that 31% have completed repayment. This may occur because the NPSAS data base covers a dozen years, and many earlier defaulters had time to improve their circumstances enough to repay. Trusheim's (1994) study of self-reported financial aid found that student reports about receiving financial aid were over 90% accurate, but they were not accurate regarding the amount. Therefore, we assume that the borrowers in this study are highly accurate about whether repayment is occurring, but they may be inaccurate reporters of the exact amount repaid.

Because race and ethnicity exert such a strong effect on the findings in previous studies noted above, we wanted to explore the possibility of differences in the patterns of default for each racial group. Moreover, the research literature suggests the need for investigating variable default behavior among different ethnic groups. We are limited by the low number of borrowers in the data set for Asians and Native Americans. However, we are able to capture enough cases to carry out separate logistic regressions for Whites (Model W), African Americans (Model B), and Hispanics (Model H), although this last population barely meets the recommended standard of 10 cases per variable. Table 3 shows the results of the three separate logistic regressions.

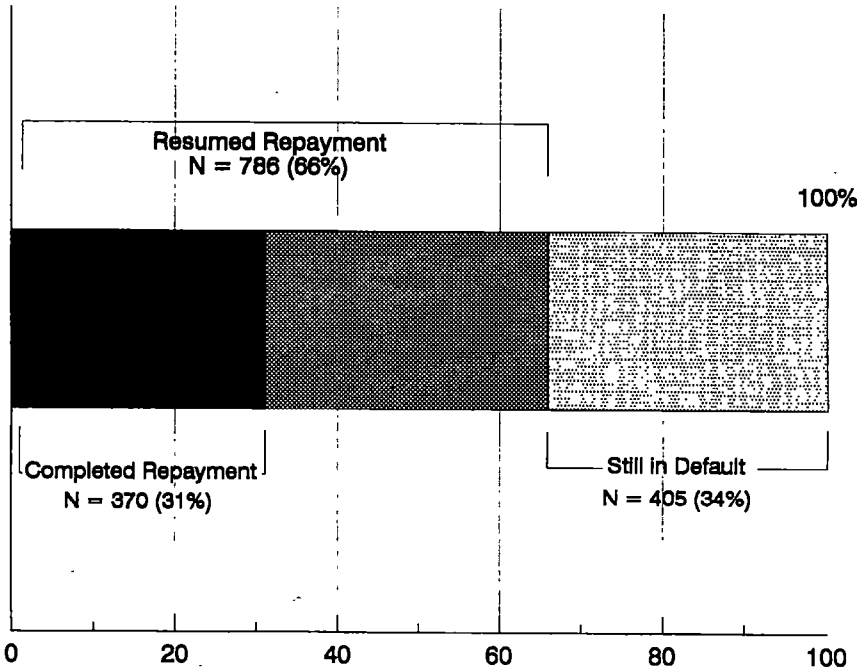


FIG. 2. Proportion of Repayment by Student Loan Defaulters (N = 1191)

TABLE 3

Logistic Regression Results for Selected NPSAS-87 Subgroups

Measures	Model W (Whites = 5010)		Model B (Blacks = 754)		Model H (Hispanics = 162)		Model M (All Minorities = 1046)	
	Beta	Delta-P	Beta	Delta-P	Beta	Delta-P	Beta	Delta-P
Institution Type								
2-yr college	-0.171		-0.29		0.16		-0.22	
4-yr college	-0.34**	-0.035	-0.16		0.07		-0.06	
Doctoral univ	-0.29**	-0.031	0.03		0.79		-0.01	
Borrower: Precollege								
Female	-0.47****	-0.046	-0.52****	-0.129	-1.33**	-0.132	-0.29**	-0.071
Parents' education								
High-school graduate	-0.01		-0.11		-1.57*	-0.144	-0.05	
Less than 2 yrs	-0.33*	-0.034	-1.18****	-0.277	-0.46		-1.08***	-0.234
2 yrs college	0.23		-0.49*	-0.123	1.64		-0.29	
Completed college	0.11		-0.21		0.33		-0.06**	-0.133
Master's or PhD	-0.19		0.02		-0.87		-0.41	
Parents' Income								
\$11,000-\$16,999	0.39**	0.052	-0.15		-0.09		-0.32	
\$17,000-\$22,999	0.13		0.36		0.29		0.28	
\$23,000-\$29,999	-0.06		0.01		-0.69		0.00	
\$30,000-\$49,999	-0.33**	-0.034	-0.00		-1.40		-0.07	
\$50,000 or more	-0.19		-0.55		0.80		-0.49	
High-school diploma	-0.98****	-0.079	-0.20		-1.70**	-0.150	-0.29	
Borrower: College								
Family support	-0.22**	-0.023	0.28		-1.55		0.10	
Grants/scholarships	0.002		0.22		0.35		0.09	
Work study	-0.075		-0.38		0.34		-0.25	

TABLE 3 (Continued)

Measures	Model W (Whites = 5010)		Model B (Blacks = 754)		Model H (Hispanics = 162)		Model M (All Minorities = 1046)	
	Beta	Delta-P	Beta	Delta-P	Beta	Delta-P	Beta	Delta-P
Work	0.071		-0.25		-0.52		-0.31**	-0.075
Transfer status	0.013		-0.19		-1.43		-0.05	
Science/technol major	-0.35****	-0.036	0.11		-0.23		0.07	
College GPA	-0.40****	-0.040	-0.11		-0.86		-0.27**	-0.066
Earned degrees								
License/certificate	-0.52****	-0.050	-0.73***	-0.180	1.33		-0.45*	-0.108
Associates	-0.99****	-0.080	-0.74*	-0.182	-8.52		-0.56	
Bachelor's	-0.99****	-0.080	-0.57**	-0.141	-0.75		-0.80****	-0.182
Master's or PhD	-1.46****	-0.099	0.19		-8.87		-0.74**	-0.171
Amount borrowed	0.00		0.00		0.00		0.00	
Borrower: Postcollege								
Dependent children	0.28****	0.036	0.20**	0.050	0.37		0.23****	0.057
Married	-0.41***	-0.041	-0.56**	-0.139	-1.80*	-0.153	-0.78****	-0.178
Separated/divorced/wid	0.64****	0.092	0.11		-0.50		0.02	
1986 Gross income	0.00		0.00		0.00		0.00	
Constant	1.14		1.44		3.34		1.53	
Average Default Rate		0.134		0.557		0.191		0.465
	PCP = 86.7% X ² , df = 547.6, 31****		PCP = 63.7% X ² , df = 75.3, 31****		PCP = 86.3% X ² , df = 65.2, 31****		PCP = 65.0% X ² , df = 142.7, 31****	

NOTE: Non-significant variations in Beta weights and Delta-p values occur, depending on how one treats the missing values in 1986 income. Additional details may be obtained from the first author.

*Significant at 0.10 level. **Significant at 0.05 level. ***Significant at 0.01 level. ****Significant at 0.001 level.

Each model shows the delta-p statistics for the precollege, college, and postcollege characteristics and experiences. The first of the data columns for each model indicates the standardized beta weights (representing the relative importance of each variable, controlling for all others, on the logit). The second column displays the statistically significant delta-p values (showing the change in the probability of default that each significant variable makes, controlling for all others).

In Model W the beta weights and delta-p values indicate that there are three variables that generate significant increases in the probability of loan default: parent income below \$17,000, dependent children, and being separated, divorced, or widowed. Significant decreases in default probability are produced by attending a four-year college or doctoral university, by being female, by having parents who attended college and who have incomes above \$30,000, by earning a high-school diploma, by receiving family financial support while in college, by majoring in the sciences, by attaining high college grades, by completing a college degree or professional license, and by being married.

Table 3 does not show the delta-p values for the other conceptually relevant variables because they are not significant and do not improve model fit. These include transfer status, various sources of non-loan financial aid, and amount borrowed.

While attending a four-year college or university lowers the default rate among Whites by over 3%, controlling for all other variables, the completion of a degree has an even greater impact on lower default rates. Completing an associate's or bachelor's degree lowers the default rate by 8%, and completing a master's or doctorate lowers it by almost 10%.

The delta-p values in Model W indicate that White females are 4.6% less likely to default than males. Having a parent who attends college or whose annual income exceeds \$30,000 lowers the default rate by 3.4%. Those who receive high-school diplomas have a 7.9% lower default rate. A major in a scientific or technological field is associated with a 3.6% lower default rate, and each one point increase in the college GPA (e.g., from 2.0 to 3.0) is associated with a 4% lower default rate. The data also suggest the importance of completing one's program of study, regardless of degree level. Earning a degree or certificate lowers default by 5 to 10%.

Consistent with the bivariate analysis, being separated, divorced, or widowed increases the default rate by over 9 percentage points, controlling for all other variables, and having dependent children increases default probability by 3.6% per child. Being married lowers the probability of default by over 4%. Each dollar increase in earnings reduces the probability of default by a significant but small amount.

The average default rate for the Model W population is 13.4%. Over-

all, Model W correctly predicts 86.7% of repayment and default behavior, but this is deceptive, because it correctly predicts 98.6% of repayment but only 10.8% of default.

The regression results for the Model B data set are also shown in Table 3. Fewer beta and delta-p values are significant for the African American population (than for Whites), but the magnitudes are much greater. Black females (compared to males) have almost a 13% lower default rate — three times the effect for White females. Having a parent who attended college is associated with 27.7% lower default for African Americans — eight times the size of the effect on Whites.

For both Whites and Blacks, degree completion has a dramatic influence on lowering the rate of loan default, but the impact of each credential through bachelor's degree attainment is much greater for Black borrowers. Completing a license/certificate or associate degree by Blacks lowers their default rate by about 18%, while completing a bachelor's degree lowers the probability of default by 14.1%. Comparing the delta-p values in Models W and B reveals that earning a license, an associate degree, or bachelor's degree is two to three times more important for Black borrowers than for Whites.

In Model B, married borrowers exhibit a default rate that is almost 14% lower than do those who are single — an effect that is three times the size as the effect for Whites. Among African American borrowers each dependent child increases the probability of default by about 5%. Again this increase is substantially greater than the 3.6% increase for Model W borrowers with dependent children.

The average default rate for the Model B population is 55.7%. Model B correctly predicts 63.7% of overall borrower behavior, but (unlike Model W) this model correctly predicts a greater amount of default (75.9%) and only 48.1% of repayment.

Turning to Model H in Table 3, we see that the average default rate is 19.1%. Only four variables attain statistical significance, and they each serve to lower the probability of default by similar amounts. Being female, being married, graduating with a high-school diploma, and having a parent who did also reduce default by amounts ranging from 13.2 to 15.3%. This model is responsible for 86.3% of the cases correctly predicted (93.9% of repayers and 54.8% of defaulters).

Finally, we generated Model M, which combines all ethnic minorities — Asians, Blacks, Hispanics, and Native Americans ($N = 1046$). With an average default rate of 47%, the minority population exhibits several influences that are apparent in Model W as well, but the magnitudes are much greater. Having dependent children increases the default rate by 5.7% per child, compared to 3.6% for Whites. Among all minority pop-

ulations together, the default rate is lowered by being female (−7.1% vs. −4.6% for Whites), having a parent who attended college (−23.4% vs. −3.4% for Whites), being married (−17.8% vs. −4.1% for Whites), and earning a college degree or certificate (e.g., a bachelor's degree lowers default by 18.2% for minorities vs. 8% for Whites). Even the influence of college GPA is greater for minorities. Thus, the beneficial impact of these characteristics is much stronger for minorities than for Whites.

Interestingly, only one variable proved significant for minorities but not Whites — the influence of working during college lowers default by 7.5% for the minority population, but it had no influence in Model W. For minorities, this variable may reflect a work ethic and motivation that leads to later success.

We were interested in conducting this research because of the strong connection between race and loan default in the earlier studies. In this study, as well as in the previous NPSAS-87 studies, we find that having dependent children and being separated or divorced significantly increase the probability of default. Conversely, being married and completing a degree program significantly decrease the probability of default. Thus, the regression results indicate not only that these factors play strong roles in loan repayment behavior, but also that they outweigh the effects of most other variables, including parent income, type of institution attended, transfer status, financial aid mix, and annual income.

Translating the regression results into descriptive statistics for each ethnic group, Table 4 shows that three variables, degree completion, marital status, and dependent children, are the great equalizers. Borrowers in similar circumstances, especially with respect to earned degrees, marital status, and family size, exhibit generally similar levels of income and loan default, regardless of race or ethnic group. These results have not been brought to light by previous studies, and they have enormous policy implications because they direct our attention toward borrower behavior and away from endogenous characteristics like race and institution type.

Conclusion, Discussion, Implications

Most Prominent Findings

Using a larger and more representative national population than any previous study, this research examines the apparent causes of default and repayment behavior among White and minority populations. We undertook this study because of the overall size and growth of the student loan default problem and because other studies have found borrower race and ethnicity to be highly predictive. Concomitant with the growth

TABLE 4

Incomes and Default Rates for Each Ethnic Group Separated According to Differences in Marital Status, Dependent Children, and Degree Attainment

Borrower Characteristics	1986 Taxable Income	Default Rate
Married with No Dependents and Bachelor's Degree or Higher:		
Asian American	\$44,067	08%
African American	\$45,625	10%
Native American	\$44,311	07%
Hispanic	\$43,911	08%
White	\$40,985	07%
Unmarried (Includes Single/Sep/Wid/Div) with One or More Dependents and No College Degree:		
Asian American	\$22,350	37%
African American	\$22,350	43%
Native American	\$22,325	37%
Hispanic	\$24,875	38%
White	\$21,604	35%

in student borrower default is the commonly held perception that institutions of higher education themselves contribute substantially to this problem. Despite the demise of *in loco parentis*, colleges and universities are widely believed to exert considerable influence on the personal actions of their students, not only while the students are on campus pursuing their degree programs, but also after they cease attending the institution and leave the campus. Current student loan policy and national legislation is based substantially on this belief.

First, we find only modest evidence that type of institution attended has an impact on student loan default. Rather, the effects of institution type appear to be outweighed by the level of degree earned by the borrower. Indeed, the small impact of institution type appears important only for White borrowers, but not for Blacks or Hispanics or other minorities. These results are consistent with findings by Volkwein and Szelest (1995), and with studies by Hearn (1984, 1991, 1992) that found significant linkages between the background characteristics of students and their college destinations. Overall, the evidence suggests that these default rate differences are based more substantially upon the nature of the borrowers and their achievements than they are upon the types of institutions the borrowers attend. For example, the default rate problem at proprietary institutions is not much greater than it is at accredited two-year colleges.

Second, although there is wide variation in default rates among racial and ethnic groups, the dominant factors that contribute to loan default

among Whites and minority groups differ more in degree than in kind. In other words, the variables that reduce and increase loan default are substantially the same across minority and majority populations, but their influence on minorities is larger. Among all populations, we find that two measures (sex and marital status) exert consistent influences on lower default behavior, but being female and being married lowers the default rate even more dramatically for racial and ethnic borrowers than it does for Whites. Similarly, though having a parent who attended college, completing a degree, being married, and not having dependent children are all factors that lower the likelihood of default and increase the likelihood of repayment, these effects have the strongest impact on the population with the highest default rates — African American borrowers. Thus, the magnitude of the effect (reflected in delta-p values) is generally larger for the minority populations than for Whites in this study. For example, the benefit of earning a degree is two or three times greater to a Black borrower than it is to a White borrower. This finding suggests the power of public and personal investment in the education of minority groups and is consistent with the research literature on people of color.

Third, borrowers in every racial and ethnic group who have similar earned degrees, marital status, and family size exhibit almost identical records of earned income and loan repayment. The borrower's socioeconomic status, type of institution attended, grades earned, and choice of major appear to be less important than whether he or she has completed a degree, is married or single, and has dependent children or not. Blacks and Hispanics in this study, compared to Whites, have lower levels of degree attainment, lower levels of academic achievement, almost twice the number of dependent children, and almost twice the rate of separation and divorce. These circumstances, rather than race/ethnicity, appear to be the reasons for their repayment and default behaviors.

Fourth, two out of three defaulters had resumed payment at the time of the 1987 survey, and almost one-third had completely repaid. This is one of the more interesting and perhaps hopeful findings in this study. For most borrowers, loan default appears to be temporary; as their situations improve, defaulters are able to repay. Repayment after default strikes us as a phenomenon for fruitful additional study. These findings have rich implications for national policymakers, campus managers, researchers, parents, and students alike.

Similarities and Differences with Other Studies

We began this study by merging five theoretical perspectives and found support for the relevance of four of them. *Human capital theory*

and the value of public subsidy is demonstrated by the significant linkage between earned degrees and lower default rates (in Models W, B, and M). The *ability to pay model* is supported by the role of family support (in Model W), by marital status (all models) and by dependent children (all except Model H). The relevance of *student-institution-fit perspectives* is reflected by the importance of college grades and college major.

The empirical literature on this topic contains only four previously published investigations that compare the characteristics of defaulters with the characteristics of institutions they attend, and these investigations produced results that are in some important respects consistent with our own. A study on a population of borrowers at 26 Pennsylvania two-year and four-year campuses found that a group of institutional variables (including size, cost, highest degree, and institution type) had no impact on default rates compared to important borrower characteristics, such as race, parent income, and graduating with a degree (Knapp & Seaks, 1992). In addition, study of a population of California proprietary and two-year college borrowers found that the two institution types contributed little to their model once student characteristics were taken into account (Wilms, Moore, & Bolus, 1987). In his NPSAS-87 analysis of 4750 borrowers, Dynarski (1994) found that students attending proprietary and two-year schools had higher default rates after controlling for other variables, although his analysis did not include earned college degrees. In our study, earned degree outweighs the influence of institution type, especially among African Americans. Volkwein and Szelest (1995) analyzed a national sample of 2600 borrowers and concluded that an array of institutional characteristics (reflecting mission, size, wealth, complexity, and selectivity) exhibited minor influences on default compared to borrower characteristics like college GPA, major, degree earned, marital status, and dependent children. Our larger national data base, containing more than six thousand borrowers and a thousand institutions, strengthens their conclusions considerably. We find little support for the hypothesis that institution type has an impact on student loan default, especially not among ethnic minorities.

College GPA in our study is a predictor of loan default and repayment behavior among Whites and minorities as a whole, although degree completion is more important than grades earned. Most investigations of loan default have not included measures of academic ability or performance. The earlier single-institution studies by Dyl and McGann (1977), Stockham and Hesseldenz (1979), Myers and Siera (1980), and Gray (1985) concluded that college GPA is positively associated with repayment. More recently, Flint analyzed populations of NPSAS bor-

rowers (1997) and two-year borrowers in Illinois (1994) and found, as we did in Model W, that college GPA is an especially powerful predictor of loan repayment.

We suspect that academic performance in high school and college are early indicators of work habits and motivations that eventually lead to corresponding repayment behaviors. Low academic performance may have several detrimental influences. First, it may encourage (or even require) students to withdraw before degree completion. Second, poor performance may leave students dissatisfied with their college experience. Third, a low GPA makes it difficult for students to continue their education and earn additional degrees. Each of these possibilities will lower the likelihood of repayment. We introduced college GPA as one indicator of student-institution fit, but it may also serve as a proxy for student ability, conscientiousness, and motivation — traits associated with success in later life as well as in college.

Several measures did not prove to be particularly significant for minorities, including parents' income, gross income, and the amount and types of aid. Other variables, like college major and family support, are significant for Whites but not for Blacks and Hispanics. One explanation for these differences among groups may relate to the smaller sample sizes of Blacks, Hispanics, and minorities, which are a fraction of the number of Whites in the study. As shown by Pedhazur (1982), the larger the sample size, the higher the number of potentially significant predictors.

We expected, but did not find, that misinformation about the repayment process would be different across the models. However, defaulters in all groups seem to realize that the loans must be repaid and are equally confused by the repayment process. This is consistent with Flint's NPSAS analysis (1997), which shows that loan counseling variables are not a significant influence on repayment.

We also expected, but did not find, that the amount of loan indebtedness would have a negative influence on repayment, at least by minorities, if not Whites. This is one of many studies showing that the amount borrowed has either no effect or a beneficial effect on student loan repayment and default. Sanford (1980), Myers and Siera (1980), Gray (1985), Flint (1994, 1997), and Volkwein and Szelest (1995) have all found that higher student loan indebtedness is not detrimental to repayment behavior. The explanation may rest in economic and human capital theory. Higher levels of indebtedness result from additional years of schooling and degree attainment. Those with higher levels of training and degree credentials, regardless of race, are able to compete more successfully in the labor market for jobs and income. It is quite clear from the finance literature that additional years of schooling and additional

degrees yield greater rates of return (Leslie & Brinkman, 1988). Thus, even though student borrowers with advanced degrees emerge from college with higher levels of debt, their investment generally enables them to enter careers that yield higher levels of income and make loan repayment more likely. Degree completion is the most influential variable among Whites and minorities alike. These findings are consistent with the economics literature, indicating that the American labor market is very degree sensitive (Cohn & Geske, 1990).

Recent research by Duncan (1994) found that family income differences eliminate most of the gap in years of schooling between Blacks and Whites. Thus, we anticipated that parent income and family support would be influential in Models B and H, but they are not. Whereas higher levels of parent *education* are associated with lower default rates for all three populations, parent *income* and family support while in college are *not* significant predictors of default behavior among African American nor Hispanic borrowers. Parent education may be a more powerful variable than parent income because it reflects certain values that transcend income (Coleman, 1988).

We believe that at least a portion of the nonsignificant differences among the Models are statistical artifacts created by minority borrowers having both lower average parental incomes and smaller standard deviations in income compared to Whites. Nearly three-fourths of the Black and Hispanic borrowers in this study come from families at the two lowest levels of income, compared to less than half of White borrowers. These significant differences suppress the mediating influence of parental income in Models B and H, especially with the smaller sample sizes. Another problem with parent income is that it may not be reported accurately by students. For example, there is some evidence that low-income Hispanics and other disadvantaged minorities are least likely to report parent income accurately (Olivas, 1986).

The literature also suggests that parent income, especially for minorities, does not sufficiently capture significant differences in family wealth and access to beneficial social and occupational networks. Blau and Graham (1990), for example, found that even when controlling for current income and other demographic variables, young Black families hold only about 18% of the wealth of young White families. In addition, Coleman (1988) indicates that occupational and economic attainment is also a function of the cultural and social capital of the family. A strong family support system provides the student with an advantage in educational and occupational attainment, and Black, Hispanic, and American Indian families may lack these connections to a greater extent than Whites and Asians. The research evidence suggests that prejudice and

segregation and separatism, both inside and outside minority group communities, act to reduce the cultural and information networks that provide access to occupational opportunities (Coleman, 1988). In his longitudinal panel study, Duncan (1994) found that both neighborhood and family characteristics are significant contributors to differences in years of schooling among racial groups. With networks that are less rich and diverse, African American and Hispanic (and for that matter Native American) borrowers may have constricted educational and career opportunities and, therefore, a higher propensity to default, regardless of ability and parent income. Thus, colleges and universities that serve these students should consider the need for additional career counseling and placement services to fill gaps in these students' social and occupational networks as well as to lower their default rates.

An ability to pay perspective also suggests that *personal* income levels would be highly significant in our models for minority groups as well as for Whites, but they are not. We expected that 1986 income would be an influential variable, but we were surprised by its relative weakness. Because the data base includes borrowers who left college beginning in the 1970s up through the mid-1980s, and because many of these loan defaults occurred during the 1970s, we suspect that 1986 income has a low relationship to the income at the time of default for many borrowers in the sample.

Need for Further Study

There are several areas deserving additional examination. First, we found that only one-third of defaulters in NPSAS-87 had not repaid their loans or resumed payment. This finding deserves confirmation on a current population. Public and lawmaker concern may be alleviated if the "real problem" is only one-third the amount advertised. We should also learn more about defaulters who subsequently repay. Second, the lower default rates for females deserve further examination. They suggest the existence of within-race differences in patterns of loan repayment. Third, research is needed on the dynamics of marital status and family size as influences on loan default. Our measures of marital status and family size are at the time of first loan repayment or default. We do not know the marital status and family size at the time these students first borrowed and enrolled in college, but we do know that these borrowers were enrolled full-time in order to be eligible for their federal loans. We assume that their status as full-time students means that most were unmarried without dependent children, but we do not know exactly, and this is important information in view of the heavy influence of these fac-

tors. Fourth, the roles of academic talent and student effort as predictors of repayment need to be more thoroughly investigated. We, along with parents and students, should not ignore the likelihood that loan repayment is a proxy for postcollege financial and social success, a significant portion of which results from the personal investments — energy, discipline, work habits — that students make during the college years. Fifth, the only study with higher PCPs than this one included personality measures (Stockham & Hesseldenz, 1979). Most models have proven better at predicting repayers than defaulters, and we need to expand the types of measures under consideration. Sixth, federal legislation tends to treat institutions alike, but the more recent atmosphere in Washington, DC, and several state capitals reflects a growing reaction against costly and unproductive “one shoe fits all” regulation. Future policy studies should investigate the likelihood of significantly different patterns and causes of default among borrowers from various institution types. However, we also suggest that researchers and policymakers look beyond the institutions attended by borrowers and focus instead on the root causes of loan default behavior and on the need to craft policies that take variable causes into account.

Implications for Policy and Practice

The practical and policy implications of our study are complex because they reveal paradoxical clashes among the values, goals, and policies of public subsidy, educational opportunity, cost effective investment, and institutional accountability. On the one hand, our models provide ample evidence that important aspects of the current system are functioning as they were designed. The models suggest that student borrowers from all races and income groups who stay in school to degree completion are likely to repay their loans and avoid default. Thus, the educational investment is returned and the cycle of poverty is broken. On the other hand, if students do not perform well academically, and worse, if they do not complete their degree programs, the return on their investment drops, and they are less likely to be able to repay their loans. In fact, the additional indebtedness may be a heavy burden. The federal government gives the campus a keen interest in how this all turns out for the student by holding institutions accountable for their former students who default.

This public accountability perspective arises from the political science/public administration literature. The concept of *accountability in a bureaucratic democracy* justifies the government’s attempts to enforce sound management practices that balance effectiveness and efficiency

(Yates 1982). The government acts in the public interest in part because higher education is viewed as a social right rather than a privilege (Kerr 1963). Within these national values, access to higher education, facilitated by public funding, should be provided to all who can benefit from it. Thus, postsecondary institutions as agents of this national policy become accountable to the general public interest (Mortimer, 1972). This perspective creates a climate that justifies a federal policy that holds campuses accountable for the default behavior of student borrowers, even though default occurs after students have left the institution.

Campus enrollment management and financial aid programs appear to be in a struggle for the right balance between survival, selectivity, and accountability. Here is the enrollment management dilemma: On the one hand, campuses need student enrollments (and the revenue that comes with them) in a competitive enrollment-driven economy in which over 3000 out of 3600 accredited institutions of higher education admit over 80% of their applicants (Volkwein, 1994). Most, though not all, campuses have a self-interest in admitting and retaining a huge proportion of their applicants as a matter of economic survival.

On the other hand, many applicants have poor records of prior achievement and are not good risks for acceptable academic performance and graduation. Between one-half and two-thirds of the variance in retention and graduation rates among institutions of higher education are predicted by entering student selectivity measures (Volkwein, 1994). Poor academic performance is the number one reason for student departure, and departure before degree completion in our study is the number one reason for loan default. Maintaining selective admissions standards, therefore, is a viable enrollment management and loan default reduction strategy, because it produces higher persistence and graduation rates, at least at most institutions. Moreover, faculty have concerns about academic standards — concerns that are usually reflected in pressures for selective admissions. Colleges and universities thus experience Janusian enrollment pressures both to admit more students and to become more selective.

The federal government is a paradoxical partner in this dilemma because it not only allows but encourages institutions, in the name of educational opportunity and human capital investment, to give loans to students who are poor risks (both educationally and economically), while simultaneously putting accountability pressure on the very institutions that serve these risky borrowers. Concerns about high levels of default have led the federal government to include high default rates as “triggers” for loss of federal grant and loan programs. Accordingly, default rates above 40% in one year or 25% over three years exclude the institution from qualifying for federal aid. This national policy not only ig-

nores our finding that most defaulters resume and complete repayment, but it also assumes that default rates are under institutional control (even though our results show that personal borrower behaviors substantially outweigh institutional ones).

The current federal obsession with graduation rates and student loan defaults as performance measures seems rather crude, but it may work if it encourages campuses to improve academically and to become more thoughtful and selective in admissions. Institutions obviously have more influence upon the academic achievement and persistence of their borrowers than they do upon their race or sex or family size or marriages. Our models suggest that campuses can best assist their student borrowers by creating a climate that promotes good academic performance and ensures student degree completion. To the extent that colleges and universities can foster behavior that leads to student learning and skill attainment (reflected in good grades) and to student degree completion, they are likely to observe higher repayment and lower default rates among their former students. This may require campuses to strengthen academic degree programs and support services, including child care, that are responsive to the labor market and that give students needed skills (Volkwein & Szelest, 1995).

Although admissions selectivity and academic support services may be improvements leading to higher graduation and loan repayment rates, the frustrating fact is that a great deal of loan default behavior results from factors that are clearly beyond campus control, such as broken marriages and dependent children. Thus, a public paradox exists: institutions are held accountable for loan default behavior *some* proportion of which is a consequence of both educational openness and government encouragement and a *large* proportion of which is related to factors for which individual borrowers rather than institutions should be held accountable, especially when it occurs years after students have left the campus. Thus, financial aid officers and enrollment managers find themselves caught in a national clash of values between public service versus accountability.

The banking industry protects investors' money by using criteria to screen out risky borrowers, but the Guaranteed Student Loan program does the opposite by using tax revenue largely to serve risky borrowers. This is a delicate problem, because if hospital trauma centers were penalized for having higher than average death rates, they would likely reduce or eliminate the admission of trauma-injury patients (Volkwein & Szelest, 1995). Because it is illegal to deny federal loans (or even to vary the amount) to students based on factors like sex or race or academic ability, the admissions decision is likely to be the point at which institutions attempt to predict and control graduation rates and loan repayment

prospects. The danger is that campuses will begin to search for overly simplistic admissions indicators, such as race and poverty, which may predict and screen out likely dropouts and loan defaulters. Such understandable campus action would diminish educational opportunity for many deserving students and would contradict the central purpose of the student loan program, which is to increase access to higher education, not deny it. Thus, one government policy, aimed at holding campuses responsible for loan default, may have the unintended consequence of undermining another government policy, aimed at interrupting the cycle of poverty in America.

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Women and Minorities in Science and Engineering

A Life Sequence Analysis

At the outset we should emphasize that this article is organized in a somewhat atypical fashion; that is, we have merged the existing literature on this topic with our own original results, rather than having composed separate literature review and findings sections. This unusual organization reflects the explicit purposes of our study: (1) to synthesize what others have learned about this important topic and then (2) to test those themes by analyzing two national data sets. Further, we illustrate rather than report all the data that served as the bases of our empiricism, in keeping with the study emphases: We do not want to overstate the importance of our own results, compared to the much more extensive work of others, in reaching our conclusions. In sum, the conclusions that we report represent an integration of the work of previous researchers and of our own original efforts.

Background

Underutilization of women and minorities in science and engineering is a problem of national priority; social equity and the quality of U.S.

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labor are involved. Although the numbers for minorities remain discouraging, women have nearly reached or even exceeded parity with men as entrants into numerous scientific fields; nevertheless, their representation in many specialties remains substantially below their distribution in the population (National Research Council, 1991, 1994; Seymour & Hewitt, 1994; Commission on Professionals, 1994). Not only does the lack of parity raise obvious social concerns, the quality of the science and engineering labor force is at issue, for even though the supply of scientists and engineers appears, at least for the present, to be adequate to national needs, larger labor supply pools translate into higher quality scientific workers, thereby increasing marginal labor productivity and, in turn, the productivity of the overall economy.¹ Put another way, all else being equal, we would expect that the more women and minorities enter these fields, which are known to be powerful contributors to national productivity, the larger will be the nation's stock of scientists and engineers, the greater will be the quality of that stock, and the greater will be the productivity of the nation's labor force.

Underrepresentation of women and minorities in science and engineering is not a new topic in science policy research. A recent review of the literature identified no less than 120 empirical and theoretical undertakings related directly to the issue (Leslie & Oaxaca, 1997). During 1995 and 1996 alone, many new articles on the subject were published or presented at national conferences (e.g., Barrett, 1996; Ethington, 1995; Paulson, Hagedorn, Petrides, & Wenzel, 1995; Ross, Volkwein, & Vogt, 1995; Sax, 1996; Yaeger, 1995; Zaruba & Dey, 1996). In addition to the ubiquitous commentary-type articles, this substantial literature ranges from studies that consider specific questions by examining small samples in single institutions to major national investigations of virtually all the conceivable, related issues.

Although our efforts were targeted on the postsecondary education years, we quickly learned that most postadolescent behaviors in regard to science and engineering can be understood clearly only by reference to earlier life experiences, probably most notably to very early socialization and to behaviors that become manifest in the adolescent years. What emerged from the literature synthesis was a robust early-years-to-employment explanation of why women, and to a lesser extent minorities, are underrepresented in particular areas of science, mathematics, and engineering.

This "life-sequence" approach identifies three major concepts that seem to capture most of what distinguishes majority females and minorities from majority males in regard to science and engineering study and employment. After briefly describing our methods, for each of the

three concepts we begin our treatment with the early years of life, progress on through the school and college years, and finish long after college matriculation, at a time when some individuals are employed and still others are in graduate school. We conclude the article with some policy implications.

Testing the Three Concepts: Data and Methods

The majority of our effort in this study was directed toward understanding and synthesizing the results of the extensive research completed by others. For this we employed standard integrative review strategies. Once we had discerned the lessons of previous work, we were ready to test those explanations ourselves.

It is important for the reader to understand that the data presentation below is illustrative only. The tables necessary to present all or even most of the data that yield the findings far exceed the space available (see endnote 3). This is important to know, because the reader may otherwise spend considerable time searching futilely for the data that demonstrate the finding being reported.

Our data sets included the 1971 and 1980 Cooperative Institutional Research Program (CIRP) files, which contained substantial information from the precollege years, taken at the time of college entrance and extended through undergraduate and graduate education and employment, and the National Longitudinal Survey of Youth (NLSY), which annually (through 1993) interviewed persons between the ages of 14 and 22 in 1979.² The CIRP data, and to a considerable extent the NLSY data, were almost entirely categorical as opposed to continuous. This necessitated an exclusively limited dependent variable approach to the empirical analysis. We estimated binomial logit, multinomial logit, and ordered logit models by maximum likelihood methods.

Because the estimated parameters of these models are not always easily interpreted, we focus our discussion on the estimated marginal effects of the explanatory variables (evaluated at the sample means) on the outcome (education and employment) probabilities. Because the outcome probabilities must sum to one, the marginal effects must sum to zero. Since the explanatory variables are typically dummy (indicator) variables, the notion of a marginal effect requires some elaboration. We calculate the marginal effect of each variable as the incremental effect of a change in the variable from its sample mean, holding constant all other variables at their sample means. The interpretation is that the sample means represent the probabilities of selecting someone with the given characteristics. We then estimate the effects on the outcome probabili-

ties of marginal changes in the probabilities of drawing individuals with the given characteristics.

Although a particular marginal effect may appear to be small, this does not imply that the estimated coefficients on the given variable are statistically insignificant in the underlying logit model; indeed, many are significant. Further, it must be remembered that these are marginal effects; that is, the contributions of other variables are held constant. For example, it will be noted that having a parent who has a science or engineering occupation adds to the likelihood that one will major in science or engineering, quite aside from other aspects of that occupation, such as income level, and quite aside from one's personal traits, such as high-school rank and high-school preparation in science and math.

Where number of cases permit (CIRP), we estimate separate models for white males, white females, black males, black females, Hispanic males, and Hispanic females. Most often our analysis (CIRP) is limited to white males versus white females or males versus females (NLSY). Full information from the CIRP analysis is contained in our report to the National Science Foundation (1996); full information from the NLSY is in McClure, 1997.³

Because all of the explanatory variables are dummy (indicator) variables, each set of dummy variables must have a left out reference group in order to avoid a perfect correlation among the explanatory variables. Where only a single dummy variable is included, the left out reference category is obvious. For the high-school rank variable (HSRANK4 and HSRANK3), those in the bottom 50 percentile served as the left out reference group. For the parental income variable, PARINC7 served as the left out reference group and represented parental income in the middle of the income range (where PARINC1 is the lowest income category and PARINC12 is the highest income category).

We utilize the CIRP data for the illustration of our analysis; the NLSY analysis is virtually identical. For purposes of analyzing factors that determine the probabilities of selecting a first choice from among competing college majors in the "freshman" year, we aggregate CIRP choices into five broad categories of college major: physical sciences/engineering, biological sciences, liberal arts, business, and all others. The underlying choice framework is represented by a multinomial logit model. (For analyses of persistence to the degree, graduate study and employment in physical sciences, mathematics and engineering [PSME], ordered logits are used.) The final multinomial model includes seven sets of explanatory variables, each set consisting of one or more dummy variables. These variable sets are high school rank, self-rating of math and natural science preparation for college, the presence of a college prep program in

high school, parental occupation in the science and engineering area, parental income, expectations regarding sources of college financing, and marital plans. The sample size is 9,628. We estimate a pooled model and control for gender and ethnicity with dummy variables. We also estimate separate models for each of the six gender/ethnic categories.

First we discuss findings from the pooled samples. The estimated multinomial logit model correctly predicts 46.7% of the first choices of college major. The estimated marginal effects for the pooled sample are reported in Table 1. The magnitude of the effects may be evaluated by recalling that theoretically the marginal effects must lie between -1.0

TABLE 1
Marginal Effects for the First Choice of College Major: Total Sample (CIRP)

Variable	PhSci/Eng	BioSci	Lib Arts	Business	Other
WFEMALE	-0.1115	-0.0155	0.1628	-0.0552	0.0195
BFEMALE	-0.1144	0.0216	0.1089	-0.0298	0.0137
HFEMALE	-0.1475	-0.0298	0.1686	-0.0032	0.0119
BMALE	-0.0217	-0.0367	0.0130	0.0251	0.0203
HMALE	0.0028	-0.0156	0.0231	-0.0493	0.0390
HSRANK4	0.0526	0.0589	0.0074	-0.0391	-0.0799
HSRANK3	-0.0050	0.0236	0.0059	-0.0024	-0.0221
HSPRIVUS	-0.0222	0.0195	0.0392	0.0059	-0.0424
PREPSE	0.0789	0.0782	-0.1615	0.0138	-0.0094
CPREPSCH	-0.0064	0.0015	0.0693	-0.0433	-0.0210
PAROCSE	0.0506	0.0283	-0.0257	-0.0373	-0.0159
PARINC1	-0.0075	-0.0390	-0.0456	0.0312	0.0610
PARINC2	0.0086	-0.0144	-0.0504	0.0035	0.0526
PARINC3	0.0110	-0.0367	-0.0476	0.0094	0.0638
PARINC4	0.0270	-0.0188	-0.0354	-0.0022	0.0295
PARINC5	0.0079	-0.0088	-0.0226	0.0025	0.0210
PARINC6	0.0101	-0.0216	-0.0072	-0.0025	0.0212
PARINC8	-0.0112	0.0007	0.0472	-0.0277	-0.0090
PARINC9	-0.0102	0.0205	0.0162	-0.0227	-0.0038
PARINC10	-0.0114	-0.0050	0.0623	-0.0048	-0.0411
PARINC11	-0.0701	0.0483	0.0310	-0.0132	0.0041
PARINC12	-0.0493	0.0362	0.1194	-0.0731	-0.0333
WORKSAV	-0.0043	0.0010	-0.0193	0.0091	0.0135
PARENT	-0.0129	0.0015	0.0220	-0.0006	-0.0099
GRANTS	0.0163	-0.0008	0.0544	-0.0255	-0.0445
LOANS	-0.0117	0.0048	0.0415	-0.0218	-0.0127
FUTREMAR	0.0032	-0.0320	0.0072	0.0106	0.0112

Variable Definitions: WFEMALE = white female; BFEMALE = black female; HFEMALE = Hispanic female; BMALE = black male; HMALE = Hispanic male; HSRANK4, 3 = 75th and 50th percentiles of high-school class; PREPSE = high-school preparation in science & math better than most; CPREPSCH = high-school college prep program; PAROCSE = parental occupation in science and engineering; PARINC1-12 = parental income from lowest to highest; WORKSAV = work, savings, or GI benefits a major source of college financing; PARENT = parental resources a major source of college financing; GRANTS = scholarship or grants a major source of college financing; LOANS = loans a major source of college financing; FUTREMAR = reasonable chance of marrying in college or a year after college.

and +1.0; but also note that the variables may not be statistically significant. As reflected by the negative signs (-), holding constant other factors, white females (WFEMALE) and Hispanic females (HFEMALE) are less likely (than white males) to select science and engineering or business as their first choice major and are more likely to select a major in liberal arts. For example, if the probability that a student is a Hispanic female increases by 10 percentage points at the mean, the probability of selecting a major in physical science or engineering falls by 1.5 percentage points. Black females (BFEMALE) also are less likely (than white males) to select their first choice from physical science/engineering or business; however, black females are more likely to select a major in the biological sciences and in the liberal arts. Black males (BMALE) are less likely (than white males) to select their first choice from science and engineering and are more likely to select business. Finally, Hispanic males (HMALE) are less likely to select biological science or business but are more likely to select physical sciences/engineering.

Turning to the separately estimated multinomial logit models, we find the following predictive accuracy rates for first choice of college major: white males—37.5%, white females—55.0%, black males—40.4%, black females—51.7%, Hispanic males—51.9% and Hispanic females—56.7%. We report the separately estimated marginal effects in Tables 2 through 7. Our illustrations of the data are of the major differences, among groups, in the marginal effects of the determinants of first choice of college major as they pertain to selection of majors in science and engineering.

Among the six gender and racial/ethnic groups, being in the top 25% of one's high-school class has the largest positive effects on the selection of science and engineering for white males (Table 2). The effect of better than average preparation in math and natural science is the highest among Hispanic males (Table 6). A 10 percentage point increase in the probability of reporting better than average preparation increase the probability of selecting a major in science and engineering by 2.2 percentage points for Hispanic males and 1.7 percentage points for white males.⁴ Among males, having a parent in a science and engineering occupation has the largest effect on the probability of selecting physical science and engineering for Hispanics. For example, increasing the probability of having a parent in a science and engineering occupation by 10 percentage points increases the probability of selecting a major in physical science and engineering by 8.0 percentage points for Hispanic males; next is a 1.1 percentage points effect for white males.

In the case of the biological sciences, blacks exhibit the largest positive effects of having a parent in science and engineering. A 10 percent-

TABLE 2

Marginal Effects for the First Choice of College Major: White Males (CIRP)

Variable	PhSci/Eng	BioSci	Lib Arts	Business	Other
HSRANK4	0.0669	0.0972	0.0166	-0.0642	-0.1166
HSRANK3	-0.0158	0.0741	-0.0169	-0.0014	-0.0401
HSPRIVUS	-0.0452	0.0089	0.0553	0.0414	-0.0603
PREPSE	0.1022	0.0747	-0.1579	0.0102	-0.0291
CPREPSCH	-0.0122	0.0159	0.0621	-0.0360	-0.0299
PAROCSE	0.1073	0.0097	-0.0207	-0.0213	-0.0750
PARINC1	-0.0197	-0.0283	-0.0068	-0.0141	0.0689
PARINC2	0.0385	-0.0084	-0.0643	-0.0322	0.0663
PARINC3	0.0195	-0.0816	0.0231	-0.0219	0.0608
PARINC4	0.0484	-0.0364	-0.0588	-0.0140	0.0606
PARINC5	0.0037	-0.0127	-0.0106	-0.0087	0.0283
PARINC6	0.0399	-0.0289	-0.0447	0.0070	0.0266
PARINC8	-0.0168	0.0114	0.0375	-0.0503	0.0182
PARINC9	-0.0531	0.0081	0.0333	-0.0311	0.0428
PARINC10	-0.0533	0.0157	0.0586	-0.0003	-0.0206
PARINC11	-0.2316	0.0845	0.0773	0.0153	0.0546
PARINC12	-0.0923	0.0800	0.0970	-0.0942	0.0095
WORKSAV	0.0067	-0.0215	-0.0180	0.0057	0.0272
PARENT	-0.0372	0.0191	0.0341	-0.0164	0.0004
GRANTS	0.0190	0.0188	0.0426	-0.0571	-0.0234
LOANS	-0.0357	-0.0104	0.0664	-0.0191	-0.0012
FUTREMAR	-0.0105	-0.0063	-0.0173	0.0396	-0.0055

NOTE: See Table 1 for variable definitions.

TABLE 3

Marginal Effects for the First Choice of College Major: White Females (CIRP)

Variable	PhSci/Eng	BioSci	Lib Arts	Business	Other
HSRANK4	0.0515	0.0211	0.0069	-0.0262	-0.0533
HSRANK3	0.0110	-0.0064	0.0290	-0.0011	-0.0326
HSPRIVUS	0.0020	0.0332	0.0096	-0.0149	-0.0299
PREPSE	0.0620	0.0856	-0.1724	0.0153	0.0094
CPREPSCH	-0.0041	-0.0219	0.0557	-0.0372	0.0074
PAROCSE	0.0235	0.0351	-0.0548	-0.0268	0.0231
PARINC1	-0.0016	0.0053	-0.0968	0.0371	0.0560
PARINC2	0.0140	0.0185	-0.0855	0.0205	0.0324
PARINC3	0.0170	-0.0273	-0.0799	0.0288	0.0615
PARINC4	0.0044	0.0018	-0.0192	0.0060	0.0070
PARINC5	-0.0013	0.0047	-0.0249	0.0118	0.0097
PARINC6	-0.0128	-0.0115	0.0318	-0.0178	0.0103
PARINC8	-0.0011	-0.0084	0.0530	-0.0183	-0.0253
PARINC9	0.0158	0.0330	0.0189	-0.0169	-0.0508

(Continued)

TABLE 3 (Continued)

Variable	PhSci/Eng	BioSci	Lib Arts	Business	Other
PARINC10	-0.0014	-0.0297	0.0919	0.0006	-0.0615
PARINC11	-0.0000	0.0470	0.0134	-0.0422	-0.0182
PARINC12	-0.0145	-0.0130	0.1343	-0.0384	-0.0684
WORKSAV	-0.0077	0.0179	-0.0222	0.0095	0.0025
PARENT	0.0018	-0.0109	0.0223	-0.0027	-0.0105
GRANTS	0.0198	-0.0096	0.0727	-0.0246	-0.0583
LOANS	-0.0044	0.0089	0.0159	-0.0222	0.0018
FUTREMAR	0.0138	-0.0508	0.0364	-0.0117	0.0124

NOTE: See Table 1 for variable definitions.

TABLE 4

Marginal Effects for the First Choice of College Major: Black Males (CIRP)

Variable	PhSci/Eng	BioSci	Lib Arts	Business	Other
HSRANK4	0.0779	0.0587	-0.0606	0.0003	-0.0764
HSRANK3	0.0205	-0.0321	-0.0642	0.0128	0.0630
HSPRIVUS	-0.1006	0.0061	0.1537	-0.0267	-0.0325
PREPSE	0.0714	0.0550	-0.1167	0.0119	-0.0217
CPREPSCH	-0.0198	0.0324	0.0414	-0.0399	-0.0142
PAROCSE	0.1559	0.1367	0.7729	-1.3174	0.2518
PARINC1	-0.0207	-0.0831	0.0182	0.0346	0.0510
PARINC2	-0.0163	-0.0720	-0.0423	0.0686	0.0620
PARINC3	0.0267	-0.0156	-0.1644	0.0895	0.0637
PARINC4	0.1110	-0.0239	-0.1064	0.0604	-0.0411
PARINC5	0.1506	-0.1468	-0.1347	0.0787	0.0522
PARINC6	0.0699	-0.0278	-0.0871	0.0832	-0.0382
PARINC8	-0.0822	-0.0017	0.0732	0.0452	-0.0345
PARINC9	-1.1888	0.0786	0.5727	0.1570	0.3805
PARINC10	0.6319	0.4789	1.4123	-0.9142	-1.6089
PARINC11	0.0454	-0.1212	-1.2662	1.7006	-0.3586
PARINC12	-1.0878	0.2810	1.3762	-1.1246	0.5552
WORKSAV	-0.0298	0.0005	0.0028	-0.0081	0.0346
PARENT	-0.0141	0.0406	-0.0125	0.0099	-0.0240
GRANTS	0.0109	-0.0239	0.0053	-0.0020	0.0098
LOANS	-0.0136	0.0058	0.0821	0.0079	-0.0822
FUTREMAR	0.0093	-0.0219	-0.0075	0.0566	-0.0365

NOTE: See Table 1 for variable definitions.

age point increase in the probability of this variable increases the probability of choosing a major in biological sciences by 1.5 percentage points for black females (Table 5) and 1.4 percentage points for black males (Table 4). For Hispanic males the effect is to lower the probability of selecting biological sciences by 7.7 percentage points; for Hispanic

TABLE 5

Marginal Effects for the First Choice of College Major: Black Females (CIRP)

Variable	PhSci/Eng	BioSci	Lib Arts	Business	Other
HSRANK4	0.0340	0.0141	-0.0010	-0.0199	-0.0273
HSRANK3	0.0059	-0.0478	0.0188	-0.0016	0.0247
HSPRIVUS	-0.0181	-0.0113	0.0840	-0.0463	-0.0083
PREPSE	0.0384	0.0624	-0.0963	-0.0212	0.0167
CPREPSCH	0.0034	0.0146	0.1137	-0.0499	-0.0818
PAROCSE	-0.0008	0.1542	0.3809	-0.5504	0.0161
PARINC1	0.0117	-0.0850	-0.0186	0.0240	0.0679
PARINC2	0.0016	-0.0514	-0.0128	0.0015	0.0610
PARINC3	0.0021	-0.0249	0.0131	-0.0069	0.0166
PARINC4	-0.0062	-0.0165	-0.0380	0.0010	0.0597
PARINC5	0.0081	-0.0313	0.0448	-0.0155	-0.0061
PARINC6	-0.0023	-0.0290	-0.0469	-0.0165	-0.0947
PARINC8	-0.0169	0.0319	0.0121	0.0332	-0.0602
PARINC9	-0.2265	0.1826	-0.0736	0.0163	0.1013
PARINC10	-0.2307	-0.0796	0.2068	0.0109	0.0926
PARINC11	-0.1007	-1.2704	3.4304	-0.3371	-1.7222
PARINC12	-0.1771	0.6029	2.0266	-0.4184	-2.0340
WORKSAV	-0.0013	0.0333	-0.0153	0.0071	-0.0238
PARENT	0.0157	-0.0348	-0.0023	0.0149	0.0065
GRANTS	0.0102	-0.0196	0.0523	0.0023	-0.0452
LOANS	0.0024	0.0210	0.0450	-0.0152	-0.0532
FUTREMAR	0.0005	-0.0705	0.0341	-0.0072	0.0431

NOTE: See Table 1 for variable definitions.

TABLE 6

Marginal Effects for the First Choice of College Major: Hispanic Males (CIRP)

Variable	PhSci/Eng	BioSci	Lib Arts	Business	Other
HSRANK4	0.0298	0.0799	0.1363	-0.0278	-0.2182
HSRANK3	-0.0827	0.0518	0.0716	-0.0437	0.0029
HSPRIVUS	-0.0920	0.0057	0.0808	0.0154	-0.0099
PREPSE	0.1692	0.0494	-0.2723	0.0615	-0.0078
CPREPSCH	-0.0240	-0.0049	0.1212	-0.0091	-0.0832
PAROCSE	0.7993	-0.7711	2.2908	-0.4706	-1.8484
PARINC1	-0.0373	0.1529	-0.4767	0.1257	0.2355
PARINC2	0.0887	0.0878	-0.4160	0.0851	0.1543
PARINC3	0.0678	0.0813	-0.4833	0.0681	0.2662
PARINC4	0.1612	0.0486	-0.2587	0.0267	0.0222
PARINC5	0.1286	0.0862	-0.3481	-0.0059	0.1392
PARINC6	0.0898	0.1422	-0.1781	0.0488	-0.1027
PARINC8	-1.1509	0.2133	0.3853	0.1286	0.4237
PARINC9	-0.2571	-0.2186	-2.3000	-0.2000	2.9757

(Continued)

TABLE 6 (Continued)

Variable	PhSci/Eng	BioSci	Lib Arts	Business	Other
PARINC10	1.2539	-0.4247	-2.9292	-0.2203	2.3202
PARINC11	—	—	—	—	—
PARINC12	-0.2580	-0.2389	-2.4046	-0.1068	3.0083
WORKSAV	-0.1954	0.0344	0.0574	0.0440	0.0596
PARENT	-0.0906	0.0890	-0.0204	0.1005	-0.0786
GRANTS	0.0321	0.0138	0.1075	-0.0304	-0.1230
LOANS	0.0729	-0.0066	-0.0134	-0.0376	-0.0154
FUTREMAR	0.0324	0.0153	-0.1913	-0.0139	0.1575

NOTE: See Table 1 for variable definitions.

TABLE 7

Marginal Effects for the First Choice of College Major: Hispanic Females (CIRP)

Variable	PhSci/Eng	BioSci	Lib Arts	Business	Other
HSRANK4	0.0008	0.0678	-0.0579	0.0534	-0.0641
HSRANK3	-0.0064	0.0234	0.0551	-0.0338	-0.0383
HSPRIVUS	0.0002	0.0190	-0.0250	0.0026	0.0032
PREPSE	0.0004	0.0486	-0.0078	0.0201	-0.0614
CPREPSCH	0.0006	0.0870	0.0843	-0.0693	-0.1026
PAROCSE	-0.0066	0.0952	0.4827	-1.1502	0.5789
PARINC1	-0.0013	-0.1383	0.3973	-0.1575	-0.1002
PARINC2	-0.0017	-0.1031	0.3803	-0.2359	-0.0396
PARINC3	-0.0015	-0.1576	0.2834	-0.2449	0.1206
PARINC4	-0.0010	-0.1288	0.5309	-0.2239	-0.1772
PARINC5	-0.0009	-0.1252	0.3477	-0.1976	-0.0240
PARINC6	-0.0071	-0.1439	0.2595	-0.1270	0.0184
PARINC8	0.0007	-0.8464	3.4810	-0.8563	-1.7791
PARINC9	—	—	—	—	—
PARINC10	—	—	—	—	—
PARINC11	—	—	—	—	—
PARINC12	-0.0055	-0.7933	3.8022	-1.0998	-1.9036
WORKSAV	-0.0001	0.0358	-0.0224	0.0168	-0.0302
PARENT	-0.0004	0.0121	0.1459	-0.0678	-0.0898
GRANTS	-0.0009	-0.0393	0.1436	-0.0089	-0.0946
LOANS	0.0000	0.0090	0.0853	-0.0961	0.0018
FUTREMAR	-0.0007	-0.0204	-0.0134	-0.0118	0.0463

NOTE: See Table 1 for variable definitions.

females the effect is a 1.0 percentage point gain (Table 7). Anticipation of reliance upon work, savings, or GI benefits (WORKSAV) has the largest effect on selection of a major in physical science and engineering for Hispanic males. This effect is negative and indicates that a 10 percentage point increase in the probability of relying upon work, savings,

or GI benefits reduces the probability of selecting a major in physical science and engineering by 2.0 percentage points.

Group differences in estimated marginal effects result from differences in parameter estimates as well as differences in the mean values of the explanatory variables. One way to separate out these effects is to construct Duncan dissimilarity indexes. These indexes measure the distance between any two distributions across mutually exclusive categories. The index is bounded between 0 and 1. A value of zero indicates that the two groups are identically distributed across the categories, whereas a value of 1 indicates no overlap in the distribution, i.e. perfect segregation. The index can be interpreted as an estimate of what proportion of one group or the other would have to shift categories in order to render the two distributions identical. If we predict a distribution for a given group based on the estimated model for white males and then calculate the dissimilarity between white males and the predicted distribution for the given group, the value of the index is a measure of how much dissimilarity remains after controlling for different parameter estimates between white males and the given group. In other words, the index measures the contribution of group differences in the values of the explanatory variables to overall dissimilarity. Similarly, we can calculate the dissimilarity between a group's actual distribution and its distribution as predicted from the white male model. In this case the value of the index is a measure of the dissimilarity arising from group differences in the models generating the outcomes, i.e., dissimilarity stemming from group differences in the parameter values or structure.

The Duncan Dissimilarity Index (DDI) analysis (Table 8) indicates that the disparity between white males and others almost always has more to do with differences in the effects of explanatory variables (i.e., their coefficients) than with differences in the values of the variables themselves. (For example, it is not so much differences in the number or set of math courses taken, that explain differences between male and female persistence, as it is differences in the *utility* gained from the particular courses that are taken.) This is true for all females in the first choice of college major. For example the DDI between white males and white females is 20.4, which means that 20.4% of the white female freshmen would have to change their first choice of college major in order to have the same college major distribution as white males. If the effects of the explanatory variables on choice of college major for white females were the same as those of white males, only 3.4% of white females would have had to change majors in order to produce identical distributions. By comparison the DDI between the actual college major distribution of white females and their distribution predicted on the basis of the esti-

mated model for white males is 19.0. In other words the gender differences in the effects of the explanatory variables require that 19.0% of white females change their first choice of college major in order to produce identical distributions for college major. This is much larger than the change required solely on the basis of gender differences in the values of the explanatory variables.

This illustrates the nature of the analysis, the form of the findings, and the bases for the results reported below. The following section integrates the extant literature with our own findings; the *specific* data reflecting our own finding are *not* presented, as is consistent with the purpose and emphases of our study, not to mention space limitations.

Results: The Integration of Previous Evidence and Our Own Findings

In preface we should note that centering our discussion on the most powerful concepts explaining the underrepresentation of women and minorities in science and engineering (a conclusion based upon a synthesis of the literature and our findings) results in a somewhat artificial grouping of particular variables and in omission (in the discussion) of others, which often are noteworthy by themselves. In a few cases the variables omitted may be of greater explanatory power than included variables, which were selected for discussion only if they contributed to an understanding of the most powerful concepts. (Again, we commend to the attention of the reader the full NSF Report and to McClure, 1997.)

The three concepts, self-concept/self-efficacy, peer influence, and goal commitment, are all closely connected. We begin with self-concept and self-efficacy, two closely related abstractions that constitute an important body of research in psychology and social psychology. An individual's development of the first of these, self-concept, is fundamental to development of the latter, self-efficacy. The early development of self-concept bears importantly on the achievement of science outcomes for women and minorities later in life, that is, through science and engineering self-efficacy. In turn one's self-concept/self-efficacy is impacted importantly by peers, all of which affect one's relative commitment to science and engineering. In each of the three sections below, we begin with definitions and a discussion of the relevant literature and then progress to a discussion of our own results.

Self-Concept and Self-Efficacy

Self-concept is perception of self; self-efficacy is belief in one's ability to perform a given behavior (Lent, Lopez, & Bieschke, 1991). The

evidentiary literature is quite compelling that self-concept and self-efficacy strongly affect the achievement of science and engineering outcomes for women and probably for minorities, too, although the evidence regarding minorities is much more limited.

Self-concept is both hierarchical and temporal in nature. General self-concept is at the top of the self-concept hierarchy; positive, subordinate self-concepts generally contribute to positive general self-concepts, although the former may be complementary rather than complimentary. General or overall self-concept is observable in very young children and is quite stable, but with age becomes situation-specific as the hierarchy is descended. (Subordinate) verbal and Mathematical self-concepts and self-concept hierarchies begin to develop by about ages 5–8 (Marsh & Shavelson, 1985; Marion & Coladarci, 1993); they are distinct and separate by late adolescence. Self-concept has been linked empirically to achievement (e.g., Shavelson, Hubner, & Stanton, 1976). These statements pertain to the overall population. What of differences for identifiable student groups?

Generally, in elementary school boys and girls do not vary significantly in math/science ability, confidence, or interest; however, many math/science gender differences are evident by the end of high school, with the junior high-school years probably being transition years for most youth, but particularly for girls (AAUW, 1991; Hyde, Fennema, & Lamon, 1990; Linn & Hyde, 1989; Meece, Parsons, Kaczala, Goff, & Futterman, 1982). It is instructive to note that these patterns are consistent with self-concept theory and with empirical evidence: the absence of self-concept differentiation in the early years and the distinctiveness and separateness of math and verbal self-concept in later years.

Generally, *self-efficacy*, rather than self-concept, is employed by social scientists to explain behavior related to science and engineering outcomes. This choice is supported by the definitional differences. Self-efficacy has a more specific contextual meaning than self-concept. As typically used, self-concept might be seen as the general conception of self one brings to personal decision making. It is the basis for forming one's sense of self-efficacy, which relates to specific personal decisions, such as career choices in science and engineering.

Self-efficacy theory, which usually is credited to Bandura (1977), begins with the notion that human behavior is devised through cognitive processes, with performance-based experiences being most important. Learning about ourselves involves evaluating "differential consequences"; it involves acquiring and evaluating personal information. The elements of the learning process are four in number: We learn through "performance accomplishment," which is very important and is based

upon mastery; "vicarious experience," which involves making social comparisons and is less powerful; "verbal persuasion," which is widely utilized but is of limited utility; and "emotional arousal."

An appreciation of these four factors is important to understanding the issues addressed herein: As specific obstacles arise, one's self-efficacy will be instrumental in determining whether one decides to cope with adversity, to what degree, and how persistently. Bandura observes significantly that the "strength of conviction" in one's self-efficacy will affect one's willingness to see a task or goal to completion and even whether one will make an effort: "Weak expectations are easily extinguishable by disconfirming experiences, whereas individuals who possess strong expectations of mastery will persevere in their coping efforts despite disconfirming experiences" (Bandura, 1977). Strong self-efficacy can turn threatening obstacles into events perceived as safe. Self-efficacy has been shown to predict performance accurately in 85% of tasks confronted (Bandura, 1977).

With these ideas in mind, let us return to gender differences as they may pertain to science and engineering. On essentially all characteristics hypothesized to affect science and engineering-related educational and career choices, girls do not differ from boys in the early years of life, years before the development of the distinctively different subordinate self-concepts; however, numerous, important self-concept/self-efficacy differences related to science and math are evident thereafter.

As a point of departure in examining gender differences related to science and engineering, ability differences between boys and girls in math and science are almost universally agreed to be minimal over all age ranges (e.g., Friedman, 1989; Orenstein, 1994). Although some differences usually are noted in empirical work, analytical models almost uniformly find no significance for ability measures when other factors, such as number of science and mathematics courses taken, are controlled. Even so, certain exceptions are instructive. Mathematical abilities do decline earlier and more steeply for girls, and at the high end of the ability continuum, differences clearly are noted; for example, males outnumber females 4:1 in the number of individuals earning more than 600 on the SAT-Math test (Benbow & Stanley, 1983). Nevertheless, girls tend to earn somewhat higher grades in science and mathematics. Overall, the conclusion is that ability differences fail to account for important gender disparities in science and engineering and that we must look to other explanations.

Such differences are noted on a number of other measures. The *number of mathematics courses taken* almost invariably is a primary predictor of majoring and persistence in science and engineering (e.g., Astin &

Astin, 1992). By the end of high school, boys substantially exceed girls by this measure. One's *expectations* of the probability of success in a given endeavor is known to be an important factor in formulating behavioral choices. Levels of expectations in science and math are lower for females than for males (e.g., Lent, Lopez, & Bieschke, 1991). There are several reasons for this.

Males rate the *usefulness* of science and math higher than do females, who even rate science and math as more useful for males than for themselves. Female ratings of science and mathematics usefulness decline for girls as they mature, a phenomenon that does not characterize the maturation of boys (Brush, 1980; Parsons & Adler, 1983; Sherman, 1980). No doubt female "other directedness" plays some part in this, that is the desire to please others. Linn and Hyde (1989) conclude that of all variables examined, only usefulness of math and science appears to affect persistence, and that this difference by gender has existed for many years.

Usefulness of science and math has been connected empirically to *valuing* science and math, males valuing these subjects more than females (Betz & Hackett, 1983). The importance of "usefulness" to science-and-mathematics-linked academic and career choices is illustrated by analogy to the gender differences in the valuing of athletics: Because traditionally girls have valued athletics less than boys, it is hardly surprising that historically more boys than girls have engaged in athletics, although, of course, this is changing.

It is similarly no surprise that boys voice a greater *interest* in and more positive *attitudes* toward science and mathematics than do girls, although, again, the differences emerge only after the elementary school years (Betz & Hackett, 1983). Before adolescence, interest levels are essentially the same. In one study interest even surpassed ability in predicting self-efficacy in engineering, and self-efficacy was found to intervene to mediate effects of such factors as stress, coping, and gender and ethnicity on achievement (Hackett, Betz, Casas, & Rocha-Singh, 1992).

The same is true for *confidence* in science and math: Relatively and on average, women are more likely to lack such confidence (Manis, Thomas, Sloat, & Davis, 1989). The disparity in favor of boys emerges by high school, and this relative confidence may not be supported by ability differences (Betz & Hackett, 1983). In turn, confidence in science and mathematics has been connected to test-taking skills in math/science; for example, boys are more willing or able to attempt time-saving shortcuts in solving problems.

A caveat should be inserted here. Gender-linked variables do not necessarily translate into gender-linked effects on the critical outcomes. For

example, the only causal relationship Sherman and Fennema (1977) could find among math usefulness, performance, and course plans was a moderate one between math being perceived as a male domain and math achievement, and the relationship was only for girls in the high school-years.

This caveat notwithstanding, by the end of high school, these perceptual differences are associated with gender disparities in science and engineering-related decisions. Perceptions of math usefulness generally predict intentions to take math courses and math achievement, although the greater course-taking propensity of males is not clearly detectable until grade 12 and is not strong in predicting enrollment in mathematics courses even at the collegiate undergraduate level (Sherman & Fennema, 1977; Meece, et al., 1982).

That female self-efficacy is involved in these disparate changes, is of little doubt. Girls' self-esteem drops precipitously after adolescence, with the drop for Latinas being the greatest, whereas African-American girls do not decline in self-esteem (they do dislike schools and teachers) (AAUW, 1991; Sadker & Sadker, 1994). (There may be an important clue here to understanding gender differences if it can be shown that the socialization of African-American girls differs from that of other girls and that African-American female socialization is similar to that of majority males.)

The manifestations of gender difference take several forms. Older boys rate their ability as the "secret" of their success in science and engineering, whereas similarly situated girls cite their personal diligence, skill, and effort (e.g., Jones & Wheatley, 1990; Manis et al., 1989). If girls experience problems in math, they perceive this as personal failure (AAUW, 1991, p.13). Especially boys, but girls as well, believe that male understanding of science and math is superior, even when it is not (Linn & Hyde, 1989; Orenstein, 1994). Boys overestimate their abilities; girls *underestimate* theirs.

The connection between self-concept or self-esteem and ability in science and mathematics is important. Students are more likely to enroll in optional math courses when they perceive themselves to possess high math ability or feel confident in math (Meece, et al., 1982; Sherman, 1980), although relatively few studies attempt to determine whether the links are causal, and when they do, the results are far from clear (Meece, et al., 1982).

Math comes to be viewed as a male achievement domain (Meece, et al., 1982; Ernest, 1976); the same is true for science (Mason, Kahle, & Gardner, 1991).⁵ Boys consider math to be a masculine subject (Brush, 1980); however, girls are less likely to gender-type math than are boys,

and although girls may perceive math-related careers as masculine, they do not necessarily view math as inappropriate for them (Meece, et al., 1982). They do believe that studying science is more important for boys and that it will be of greater utility for boys (Linn & Hyde, 1989). But again, these differences rarely are detected until the self-concept differentiation years, and they are not clearly evident until late adolescence. For example, gender-linked mathematics enrollment patterns do not materialize until grade 12 and are still weak among college undergraduates (Meece et al., 1982).

Clearly, self-efficacy in science and math, on average, is less evident for females than for males. The explanations would appear to involve important gender-linked perceptual differences that take many forms but that usually involve perceived male-female role disparities. The important policy question is, what changes between preadolescence and adolescence? Of course, differences in socialization experience are thought to explain many if not most of the gender differences, but what are the specific mechanisms leading to gender differentiation in science and engineering?

Identification of specific causal agents is not far advanced. Attitudes of parents and other family members, teachers, counselors, and peers are variously known or believed to play some part but most evidence is more impressionistic than hard (Haven, 1971; Jacklin, 1979; Nash, 1979). In regard to race, it appears that self-efficacy and self-confidence are primary factors in African-American male consideration of math/science careers whereas for females personal interests are paramount; nevertheless, African-American male/female interest levels are approximately equal (Post, Stewart, & Smith, 1991). African-American males give broad consideration to career possibilities, relative to females. Disturbingly, African Americans do not appear to reflect on their personal abilities in these considerations.

Self-Concept and Self-Efficacy: Our Testing

What do our results say about these issues? First, our conclusion from the literature that self-concept/self-efficacy is important to understanding underrepresentation of women and minorities is supported strongly. The associated variables in our data sets are second only to measures of commitment (which we connect to self-concept/self-efficacy below) as predictors of science and engineering study and employment.

The best measure of science, math, and engineering self-efficacy available in the CIRP files is at the point of college matriculation, when, as our findings show, the perception that one's preparation in math and natural science is "better than most" is associated about equally with

the greater likelihood of selecting physical science/engineering and biological sciences, rather than "other" fields, as the first choice of college major. The marginal effect, that is, the effect holding all other variables in the analysis constant, is a substantial 1.6 percentage point increase in the probability of choosing science/engineering majors for each 10 percentage point increase in the probability of perceiving oneself to have a relatively good science/math background.

The most closely related outcome measure available in the NLSY is "major field of study in last college attended." Here, there are four presumably good measures of self-concept (as opposed to self-efficacy), and all are related to majoring in the physical sciences, mathematics, and engineering; for example, a personal sense of pride is strongly associated with majoring in these fields and is strongly and negatively associated with majoring in nonscience fields. The reverse is true in regard to the relative feeling of personal failure. These findings are for all matriculants.

What about selected subgroups? First, the fact that white men are most likely to perceive their math and natural science preparation to be better than most is noteworthy. The comparative mean values (from CIRP) are white men, 43%; white women, 31%; black men, 26%; black women, 16%; Hispanic men 23%, Hispanic women, 17%. These are substantial differences. It is little wonder that the numbers of women and minorities entering science and engineering are relatively small.

How do the effects of self perception vary by race and gender? Results from CIRP, such as those reported in the tables, yield answers to this question. The positive marginal effect of the science and math preparation variable on the probability of choosing a major in physical sciences/engineering is larger for white males than for white females, African Americans, and Hispanic females. Only Hispanic males show a greater positive effect of relatively strong math and science preparation on the probability of selecting physical sciences or engineering as the first choice major. In short, one of the important reasons white men are more likely than women and minorities (save Hispanic men) to select math/science majors is that they perceive themselves as being relatively well prepared in math/science; i.e., their self-efficacy in science and math is stronger. In the NLSY files, mathematics knowledge scores are available, whereas an independent measure of science and math self-efficacy is not; therefore, one cannot know to what extent math knowledge, which is a very powerful predictor of majoring in PSME for males but is insignificant for women, acts through self-efficacy, independently, or in tandem. The other pertinent findings from NLSY are more extensive and are somewhat different, in that they largely reflect general feel-

ings of self-concept rather than specific science/math self-efficacy. (Of course, unless both science and math self-efficacy and knowledge are contained in the data set, it may not be possible to separate the effects of the two.) Two NLSY measures of self-perception are strong predictors of majoring in PSME for both men and women, as are the feeling that one is in control of one's direction in life and that "luck" is not an important factor in achieving one's ends; however, the predictive power of each of these variables is modestly stronger for women majoring in PSME than for men: generally, positive self-perceptions and a feeling that one controls one's own destiny has a greater utility for women in PSME than for men. Put another way, the women whose self-concepts and sense of control are less strong are more likely to major in non-PSME fields. Yet, as the CIRP results show, self-efficacy in science and math is most clearly demonstrated by white men in science and engineering.

Turning to the biological sciences, first our stated expectations in regard to math and science preparation are met: For the CIRP sample, self-perception of above average math and science preparation has a larger impact on the probability of selecting a major in PSME than in selecting a major in biological sciences. Further, we can see that a reported "stronger than most" math and science preparation has a larger positive effect on the probability of selecting biological sciences for white women than for white men. The same is true for black females versus black males. Hispanic males and Hispanic females are about equal in this regard. For the NLSY sample, too, the self-concept and sense of control variables are far less important for the biological sciences than is the case for PSME, both for men and women, although generally they are a bit more important for women in the biological sciences than for men. Math knowledge is essentially inconsequential for the biological sciences outcomes. The gender and (for the most part) racial/ethnic differences that exist in these regards are almost completely limited to PSME.

Consistently, for the self-efficacy/self-concept variables, easily the largest differences between groups are found between Hispanic males and females. These results are instructive, because gender roles tend to be most sharply distinguished among Hispanics; that is, traits held to be more masculine tend to be quite clearly associated with male behavior, and those held to be more feminine tend to be quite clearly associated with female behavior.⁶ In other words, if in fact socialization experiences do vary by gender and racial/ethnic group, if in fact these differences do manifest themselves in self-concept/self-efficacy variations by gender and racial/ethnic group, and if in fact those differences do lead to

female and minority underrepresentation in science and engineering, then we would expect those differences to be most clearly shown among Hispanics, especially Hispanic males, whose roles are most closely linked to being family providers. This is precisely what occurs. Not only is this math and science perception variable most strongly associated with physical sciences and engineering matriculation for Hispanic males, the *absence* of such perception is most strongly associated with their matriculation in the liberal arts.

There is one other variable in the CIRP data set that should impact directly on self-concept, if not self-efficacy. That variable is one's grades earned in college, and the outcome measure is degree attainment. We would expect that earning good college grades would be more important for white women than for white men, because self-concept/self-efficacy is supposed to be more critical for the former group than the latter in the pursuit of science and engineering majors. Indeed, that is what the results show. For the physical sciences and engineering, the effect of having earned undergraduate grades of B or higher has almost twice the effect on achieving an undergraduate degree and almost a 50% greater effect on earning a masters degree for white women compared with white men. The patterns are of the same general order in the biological sciences; however, here, the effects of higher grades are more beneficial for white males in earning doctoral and professional degrees.

Parental influences. One other set of variables in our data sets would appear to be important to the formation of science and math self-efficacy and, in turn, to science and engineering outcomes. Those variables relate to how parental occupations and educational backgrounds impact whether individuals come realistically to "see themselves" as scientists or engineers.

Others have concluded that parental backgrounds are germane to science and engineering achievement of their offspring, although most of this research is of a relational rather than causal nature. Jackson, Gardner, and Sullivan (1993) report that women who enter male-dominated fields such as science and engineering tend to come from intact families, have mothers who work, and have parents who are well educated and consider success to be important. Worthley (1992), too, reports that science persistence is associated with having highly educated parents. The Jackson et al. work finds that women who become engineers are likely to have fathers who are engineers and that they are likely to marry engineers. The AAUW study (1991) reports that families (and schools) are the greatest effectors of science and engineering aspirations, and Astin (1993), from more recent CIRP data, finds a positive relationship between majoring in engineering and having a father who is an engineer. The engineering stu-

dents in Astin's sample are clear that their parents want them to become engineers. Our view is that parental backgrounds work their effects on their children primarily through demonstrating the feasibility of science and engineering careers, that becoming a scientist or an engineer is a reasonable expectation, in a word, that it is efficacious.

We, too, find that having a parent engaged in physical science and engineering occupations increases the probability of majoring in the physical sciences and engineering. The NLSY files show a greater effect for males than females. The differences among the six CIRP groups in these regards are particularly instructive, being uniformly greater for males than females and by far the greatest for Hispanic males (followed by African-American males). The connection to self-efficacy, and in turn to science and engineering career commitment, is suggested by our earlier discussion regarding Hispanic culture. We hypothesize that for minority men, especially Hispanics, having a parent who is employed in physical sciences or engineering is very instrumental in creating a perception that such an occupation is a realistic goal, and that this perception reinforces science self-efficacy and supports the student becoming committed to that goal, i.e., to science and engineering study. Our reasoning is that minority males encounter many inhibitors to majoring in science and engineering and that parental role models serve as powerful counterforces. The reason that the marginal effects are less for white men is probably because they are less likely than minority men to encounter obstacles to majoring in science and engineering; therefore, parental role models are less vital. The quite different effects for women, minority and majority, may well reflect their more "eclectic" decision structure; that is, in deciding whether to major in science or engineering, women may be less prone to the influences of parental occupations because of the attractiveness of family-oriented goals. For the biological sciences the patterns are far more mixed for women, although the magnitude of the effects often are strong.

The CIRP data reveal that the marginal effects of fathers' occupations in science and engineering on the science and engineering outcomes for their children are even larger later, in shaping employment patterns, than they are in selection of first majors (a pattern not found in the NLSY data). Clearly, individuals working in science and engineering occupations in 1980 were substantially more likely to have had fathers whose occupations were in science and engineering than in some other field (CIRP data). Further, the effects for the entire sample of white men and white women were almost totally a function of the effects on the males: increasing by 10 percentage points the probability of having such fathers increased the probability of white males being employed in science and

engineering occupations by almost 5 percentage points, but for white females the effects were essentially zero. In a pattern that became clear when we examined all the "family influence" variables, white men appeared more responsive to such variables than did white women. Again, we hypothesize that female goal conflict is a major cause for the smaller effects for women.

An important exception to the pattern for family influence variables was the effect of mother's education level upon the physical science/engineering higher degree attainment of their daughters (CIRP). Mothers' college degrees affected female degree attainment positively and male attainment negatively. Because white women, on average, have weaker math/science self-efficacies than men, it may be that maternal role models are more essential for women in science and engineering than for men. Further, for those in the physical sciences or engineering, the effects of parental degrees persist at least through the master's degree; in fact, they grow modestly stronger for both men and women, before declining at the doctoral and professional level. For the biological sciences, the patterns for women are very weak, providing still more evidence that women (as well as men) who pursue degrees and work in the biological sciences are substantially different from those in the physical sciences and engineering.

Peers

Interacting with physiological change, peer influence, we believe, is the "missing link" that explains much of the great transformation of girls, during and after adolescence, from being full and equal participants in science and math to much smaller representation. We largely credit Holland and Eisenhart's, *Educated in Romance* (1990), for this insight. Holland and Eisenhart explain how female self-concept, self-efficacy, classroom experiences, and external goal orientation come together to deny women their representative places in the science and engineering professions: It is the influence of peers that is critical to how these forces play out. Although their focus is on the college years, they observe that the origins of the phenomena are in the onset of adolescence, which marks not only a clear demarcation between boys and girls in regard to science- and math-related behaviors, it signals the beginning of distinctly different paths of gender-linked general personality development.

From its nationwide survey, the American Association of University Women (AAUW, 1991) concludes that adolescence is a critical time for female self-identity development. It is a time of both dramatic biological and psychological changes; it is a "critical moment" in the development

of one's lifetime choices and decisions (AAUW, p. 2). The AAUW survey shows that prior to adolescence, girls are "confident, assertive and feel authoritative about themselves" (p. 4). In subsequent years their self-esteem declines dramatically. Notably, adolescent girls rank "being popular" as the most important personal concern, whereas boys list competence and independence. Girls report not being happy "with the way I am" (p. 5), growing more timid and tentative, and becoming more conflicted. Their physical appearance is of great importance to them (AAUW, 1991).

The similarity of these observations about the female self to female self-efficacy changes in science and mathematics is striking. Lack of self-confidence, low self-esteem, timidity and tentativeness, are all descriptions that fit many postadolescent girls in regard to science and mathematics, as is the perception on the part of girls that boys are more able in math and science than they are.

Logically, the dramatic decline in female self-esteem that occurs during adolescence (AAUW, 1991) would be expected to cause girls to become more other- rather than self-directed. Their primary concern with popularity suggests strongly that girls are likely to be particularly mindful of what their peers think of them: how they behave, their values and orientations, what they like and do not like. This other-directedness might be expected to result in openness to the suggestions of parents and teachers, provided that those suggestions do not run counter to the values of the peer culture, in which case the outcomes might be far less certain. Nevertheless, generally, one might assume that this other-directedness influences girls to develop superior academic habits, for example to complete homework assignments, study dutifully, and generally be more diligent in academic matters than are boys. Clearly, the AAUW data suggest that girls may lack the self-confidence to set their goals independently, that they may pursue life goals reflective not of what they want, but of what others want them to do. Again, the importance of commitment to goals accomplishments is clearly noted.

If adolescent girls are so susceptible to the influences of others, especially peers, what is it that others cause girls to do? Teachers, and to some degree parents, of course, want girls to be good students, often even to study science and math. Female peers, on the other hand, according to the AAUW findings, primarily value popularity. Because this and related values emerge dramatically during adolescence, popularity almost certainly is in part a reflection of personal appearance and by implication, involves appeal or attractiveness to boys (Smith, 1992).

Holland and Eisenhart (1990) demonstrate that females gain much of their self-esteem through their relationships with males. The effects are

circular: Validation of girl's and later women's behaviors by males leads to greater acceptance by peers, all tending to reinforce female perceptions that their sense of self-worth is connected importantly to the perceptions of males. This means conforming to what both female and male peers conceive of as appropriate female behaviors and values. On average, this suggests a lessening, not a strengthening, of girls' commitment to science and math; why, to a considerable degree, girls begin to lose interest in science and mathematics beginning in the junior high years; and why girls come to view science and mathematics as the domain of boys.

In discussions of our findings our academic colleagues and our students often expressed initial skepticism about this conclusion. They questioned the implicit assumption that girls were more concerned about and affected by boys than vice versa. Certainly, adolescent as well as postadolescent boys are vitally interested in girls. What differs, we believe, is how this interest plays out in relative commitment to science and engineering occupations, how males come to view work as an obligation because they see themselves as family providers, whereas girls often come to view work and family as equally attractive alternatives.

Peers: Our Testing

At the time of college entrance (CIRP data), individuals were asked whether there was "some chance or a very good chance that he or she will marry while in college or within a year after college." At first glance this variable may appear to be a very indirect measure of peer influence; however, the variable directly reflects the precise effect peers are held to have on young women: the promotion of the importance of relations with men over academic values. Indeed, plans for marriage may be viewed as a very potent test of goal conflict/commitment (the third and final concept, which is discussed in the next section) for women versus men. Our reading of the literature is that it is indeed peers who are most fundamental to greater goal conflict for women than for men, specifically as that conflict reflects science and engineering versus family goals.

Generally, students who were relatively less interested in marriage and thus more committed to careers were more likely to plan to major in biological sciences than in other fields. Among white females, having plans for marriage in college had the largest positive effect on the probability of selecting liberal arts, with much smaller positive effects on the probabilities of selecting physical sciences and engineering. Among white males, the only positive marginal effect of having plans for marriage in college was on the probability of selecting business; the marriage variable had a negative effect on the probability of selecting each

of the other majors, including science and engineering. Black women with expectations of marrying while in college were especially less likely to declare biological sciences as their first choice of major. Among Hispanic men marriage had a positive effect on the probability of selecting science and engineering, whereas for Hispanic women marriage plans exhibited the largest negative effect on the probability of selecting biological sciences and the largest positive effect on the probability of choosing "Other," which includes the "undecided major" category and might have indicated a relative lack of commitment to earning a degree. Our question here is how college peers might have impacted those plans.

In the 1980 CIRP follow-up survey, respondents were asked whether they had ever married. The results *for the total sample* were strongly in support of the peer influence (and goal commitment) hypothesis: Across the board, marriage impacted the probability of obtaining a college degree far more for women than for men.⁷ Among whites the impact was ten times as large for women; among black women it was twice as large; and, consistent with observations made elsewhere herein, Hispanic women were far less likely to have graduated if married, whereas Hispanic men were the only group to show a negative effect from never having married. In other words, having married increased substantially the likelihood that Hispanic men had achieved a degree. These results may suggest strong support for the importance of socialization and indirectly the role of peers in that process, but also for the role of culture—if indeed these influences can be separated at all.

The results from the NLSY are supportive, although the form of the data is somewhat different. Asked at the time of college entrance what they would "like to be doing at age 35," 20% of females, compared to less than 2% of males, selected "married, family." This difference directly demonstrated goals differences by gender, but indirectly may have reflected *how* those goals came to differ, that is, to some extent at least, through differences in socialization and, specifically, to differences in the influences of peers.

What about the science and engineering students? If we read the literature correctly, peer influence should have a strong effect on the underrepresentation of women, but at what stage of life? Are the effects felt primarily before college, during college, after college, or are they spread evenly across all stages? The answer would appear to be primarily before college, largely because the behavioral changes that begin for women at adolescence are cumulative; deficiencies such as fewer math courses taken often preclude later progress in these fields. The evidence from our empiricism is in two parts. First, female attrition in PSME is

roughly the same as for males (NLSY). Indeed, although female attrition is 73% for women in the PSME, overall, compared to 72% for males, attrition in the physical sciences and engineering is actually slightly greater for males than for females, being 75% and 72%, respectively. Only in the biological sciences are the attrition rates uneven, favoring males to a considerable degree.⁸ Second, the marginal effect of the marriage variable upon degree attainment in physical sciences and engineering among white women is small, which is perhaps a rather obvious result in light of the fact that female and male attrition rates are about even.

The original CIRP survey in 1971 contained some information that was highly relevant to the peer influence hypothesis, although a direct connection to the importance of peer values is lacking. The primary variables in question reflected incoming students' self-ratings in regard to general popularity and to popularity with the opposite sex. Among five related self-concept variables, popularity with the opposite sex was clearly the most potent predictor of *not* achieving degrees in the physical sciences and engineering; general popularity also was a negative factor. The literature would suggest that peer influence likely was a primary culprit. The fact that these patterns did not hold, but rather were very weak for white women in the biological sciences, was consistent with observations made elsewhere herein regarding why these women were less at risk than women in physical sciences and engineering. Finally, the relatively small coefficients for these variables among women in science and engineering almost certainly reflected major self-selection effects; that is, those who place a high value on attractiveness to men are less likely to enter science and engineering in the first place, once again drawing attention to behavioral changes that occur prior to college entrance.

We may also examine labor force status of science and engineering majors. Overall, employment status essentially is unrelated to having been married; however having never been married reduces the probability of full-time employment in science and engineering and increases the probability for the other categories (part-time employment, unemployment, and out of labor force) for white males, while increasing the probability of the former and decreasing the probability of the latter for white females.

Clearly, the effects of peers in socialization take their toll primarily prior to college admission. Perhaps collegiate peers help to prevent women from "catching up" later on. Although the "marriage variable" is at best an indirect measure of possible peer influence, marriage and child-rearing could be viewed as the ultimate tests of the influence of

peers in leading women toward what Holland and Eisenhart (1990) call being *Educated in Romance* and away from science and engineering.

Goal Commitment

Necessarily, much has already been said about goal commitment. Obviously, self-efficacy and peer influence contribute directly to personal goal commitment. From the literature and from our findings, we infer that science and math self-efficacy largely form in elementary school but are often retarded for women during adolescence by the interaction of physiological changes and peer influences, sometimes resulting in reduced or conflicted commitment to science and engineering study and work.

Commitment is known to be the most potent predictor of persistence in almost all human endeavors (e.g., Ethington, Smart, & Pascarella, 1988; Sarkar, 1993). For women, their interactions with parents, K-12 science and math teachers, and peers appear often to lead to formulation of goals that are externally directed; that is, their important life goals frequently are formed largely in response to the desires of others. Women are socialized to seek to please. Thus it is not surprising that most women tend to be interested in careers emphasizing human interaction (as are many men), even if within science and engineering. The evidence is noteworthy.

Both men and women tend to view math and science more as "masculine" fields of study. For men this perception probably reinforces their tendency to persist in these fields; for women the reverse probably is true. Women are attracted to fields seen as more nurturing, fields such as the social sciences and humanities (Hackett & Betz, 1981). Men exhibit nurturing behaviors too, but predominantly when that nurturing is in fields perceived to be masculine. For example, men are quite willing to be helpful and supportive of women in math and science classrooms, laboratories, and on math and science homework.

From her study with Hewitt, Seymour (1992) concludes that female self-worth in science and engineering is, in fact, extrinsically based, and that for many females, selection of a college major in science and engineering is externally rather than internally driven. Persistence, too, is connected directly to degree of goal commitment, specifically in engineering (Jackson et al., 1993). Thus, women, more so than men, require a "genuine interest" in their chosen careers (Dick & Rallis, 1991). In short for many women commitment to science and engineering goals may be quite tenuous.

Men are known to be more "single-minded" than women in regard to work and careers (Eccles, 1987; Manis et al., 1989), a characteristic sug-

gesting greater science and engineering goal commitment. Women perceive an incompatibility between careers in science and family life, and they see raising a family as an attractive alternative (Ware, 1988). The effects may be direct. Marion and Coladarci (1993) demonstrate that those women who place a high future value on family are less likely to take science and engineering courses; Seymour (1992) finds that female science and engineering students switch majors due to lack of personal goal commitment; and Lewis (1991) reports that those women who do wind up studying mathematics are "extremely job oriented" (p. 722).

The literature demonstrates that male/female differences regarding career and commitment continue into employment. Employed female scientists and engineers are less involved with their work than are their male counterparts although the gap narrows for those holding master's and doctoral degrees; for both bachelor's and master's degree holders, time for personal lives is rated as more important by women, compared with men (DiTomaso & Farris, 1994). Tobias (1992) raises questions about faculty prejudices against women, in particular bias against women who have strong family commitments.

We would expect that any individual who is marginally committed to any goal, in this case a science and engineering degree, would be less likely to tolerate unsatisfactory or adverse conditions than one who is fully committed. In short, all else equal and on average, men should be more likely than women to persist in science and engineering. Of course, we already know that most female "attrition" in science and math occurs prior to college entrance.

Goal Commitment: Our Testings

We have already noted that one of the largest family influences on science and engineering outcomes was whether parents were engaged in science and engineering occupations and how the effects were quite different for women and men. We spoke of the more "eclectic" decision structures of women in these regards. Also, we have observed that female commitments to science and engineering goals may be reinforced by having a well-educated mother.

From the CIRP files, commitment was best expressed by one's stated purpose in attending college. For the NLSY sample, identifying the desire to be employed in science or engineering at the age of 35 was easily the strongest predictor of majoring in PSME. The relationships were much stronger for men and for PSME, but also were strong for women and for the biological sciences. A strong desire to gain a general education and to prepare for graduate or professional school were the measures. Among those who had been enrolled in degree programs in the

physical sciences and engineering, white women were less likely than white men to have expressed these goals at the time of admission, and although the stated desire to attend graduate or professional school had positive effects on the probabilities of enrolling in physical sciences or engineering for both white males and white females, these effects were generally higher for white females. To us, these results emphasize the importance to white females of being committed to science and engineering, if they are to achieve these ends: At the time of admission, white women are less committed to science and engineering, generally, than are white men, but those white women who *are* committed, as attested to by their graduate or professional school goals, will achieve in science and engineering at relatively high levels.

Arguably, an even stronger indication of commitment is whether one plans science and engineering as a likely career. In fact, for the CIRP students, specifying science and engineering as one's likely career in 1971 was strongly and positively associated with being employed in a science or engineering occupation in 1980, and for the NLSY subjects, desiring to be "employed as a scientist or engineer at age 35" was the strongest predictor. Further, the effect was noticeably larger for males compared with females and for PSME as opposed to biological sciences. Our conclusion is that, on average, women who select science and engineering majors may be less committed to science and engineering careers, which may be to say that they are more conflicted about career and family.

Conclusion

Probably the greatest realization that has come to us from this work is that studying the phases of science and math education separately is problematic. One cannot understand why women, and to some degree minorities, are underrepresented in science and engineering unless one understands that the related behaviors are formed over at least half a lifetime, but especially in the years prior to college. Although collegiate interventions no doubt can increase female (and minority) participation rates, the critical damage is done much earlier. The essential proof of this statement is that attrition rates in postsecondary education are very similar for men and women; it is the difference in the numbers of men and women who enter science and engineering curricula, the much-discussed "pipeline effect," that largely explains gender differences in graduation rates, graduate study, and employment in science and engineering. These gender differences also are evident for minorities. Science and engineering matriculation patterns of minority men are far more

similar to those of majority men than to minority women. The gender disparities among minorities are especially large in the PSME, but again it is differences in science and engineering matriculation rates, not persistence rates, that are at odds. The patterns for the biological sciences are more mixed by gender, not only in regard to minority matriculation but also in regard to attrition rates. It is important to note that most of the problems are in the physical sciences and engineering, not in the biological sciences. Students in the biological sciences may be at no greater risk than students in general, or at least causal patterns are not at all clearly evident, even for white females.

The core contributors to participation in science and engineering, particularly PSME, are self-concept/self-efficacy, the influence of peers, and commitment. General self-concept forms at an early age and differentiates into mathematics and verbal self-concepts before adolescence; prior to this time, socializing forces are relatively evenhanded in the treatment of boys and girls, although the seeds of later disparities clearly have been sown through differential socialization. Adolescence is the critical period, a time when differentiated self-concepts begin to transform into math and science and other self-efficacies. For girls numerous actions of family members and education personnel, but especially those of adolescent peers, promote values at odds with math and science pursuits. By the beginning of high school, boys possess superior science and math characteristics, compared with girls. As a result, by the end of high school, on average, females have studied less science and math than have males, and the former are behind on many factors that contribute to the pursuit of science and engineering careers. By this time, on average, female aspirations, expectations, and especially commitments to science and engineering careers are markedly less than for men. Even those women who do enter science and engineering curricula—a group that is already highly “pruned”—are less committed, on average; they are more likely to be conflicted about career versus family. Nevertheless, both men and women respond negatively to many features of science and engineering study, especially in the introductory courses, and most of both genders migrate out of science and engineering, the proportions remaining being about equal. What can be done?

The primary foci must be on early interventions aimed at improving female science and math self-perceptions and counteracting pertinent influences of peers, interventions that will lead to greater science and engineering self-efficacy and commitment. Science and math self-perception is a function of one's knowledge of math and science concepts and one's confidence in math and science. Special efforts to expose female and minority students to elective math and science courses in their pre-

college years is important to enhancing both the skill acquisition and the confidence necessary to making science a feasible choice for a college major. Increasing math and science course requirements should not be precluded. To reap the benefits from skill acquisition, female and minority students must come to believe that they can use math and science tools effectively. We have some ideas about the kind of environments that might contribute to improved science and engineering self-efficacy and commitment, in particular for women.

Families clearly can be highly instrumental to the science and engineering related aspirations and commitment of their children. Special attention should be given to matters of early socialization. Proactive rather than reactive strategies probably will prove most useful. A specific example of the power of early socialization is seen in how the educational levels and science and engineering occupations of parents impact the science and engineering achievements of their children. Why not exploit this relationship (as some programs already are doing), not only for the children of such professionals but also for females and minorities who lack such parents? Why not expose many more female and minority youth to the work environments of female and minority scientists and engineers? And why not target such youth for recruitment to science and engineering careers?

Clearly, we must develop also more and better interventions for the adolescent years, especially in support systems. Strategies might include focus groups that would make girls and minorities aware of how their aspirations are formed, in particular the role of peers, and how powerful can be the detractors from science and engineering careers. Individual counseling sessions probably should follow. One obvious strategy is to make girls aware, early on, of the costs of adherence to peer norms, for example, the costs of avoiding math and science courses in high school and the way they come to gain their perceptions of their own science and math abilities, skills, and attitudes.

At the postsecondary level, it is not uncommon for some colleges and universities to structure student living arrangements according to various "themes." Consideration should be given to structuring housing arrangements so that female and minority science and engineering majors can live in proximity to one another, thus permitting the reinforcement of science and engineering goals and proactively working against detractors. Professional counseling and counseling by science and engineering faculty probably would be productive, too.

Space limitations have caused us to concentrate here on what appear to be the central factors contributing to underrepresentation of women and minorities in science and engineering; however, our primary omis-

sions have been of additional aspects of our three central factors, rather than of some unidentified factors. That is, we believe that other factors, such as education personnel, teaching methods, and structural traits, exert their influences chiefly through our three central concepts. What follows are a few illustrations of these additional aspects.

Evidence exists that in the high-school years, though well-meaning, science and math teachers fail to challenge young women as much as they should. Treating women as "the weaker sex" is no favor to them, at least when science and engineering careers are considered. Science and math teachers should interact with their female students with no more delicacy than they do their male students. They should challenge them, engage them rigorously in discussions, and expect high performance of them. They should insist that females, as well as males, do their own lab work, answer difficult questions, and justify their responses; in short, they should engage their female students much more in the give-and-take of intellectual discourse and provide them much less in the way of deferential, unchallenging treatment.

If these and other such approaches were carried out in precollege years, the problems of the college years would be more manageable; however, there still would remain the need to address many structural issues in college-level science and engineering programs, especially in the introductory courses. In the end the issue for science and engineering education will be how to make necessary changes while maintaining high quality. Science and engineering course work is rigorous, on average requiring more time and effort than course work in most other fields. Science and engineering programs usually attract more highly able students than do most other fields and on average produce relatively competent graduates; yet, the criticisms of these programs by their students, white men as well as others, cannot be discounted. We wonder, for example, whether in introductory physical sciences courses there are not better alternatives to the almost exclusive reliance upon mathematically based problem solving, whether a greater mix of strategies might not yield superior results? We wonder why cooperative learning strategies could not be encouraged, and why science and engineering faculty might not be persuaded to *encourage* rather than *discourage* students to persist in science and engineering programs? Our sense is that if science and engineering faculty merely became aware of the implications of many of their present practices they would be able to design adaptive strategies that would *increase*, not *decrease*, their program quality, overall. Our observations in outstanding science and engineering programs in private liberal arts colleges tell us that the proposed changes are clearly possible, even likely, where faculty sense that course enrollments must be main-

tained in order to maintain program viability. Perhaps the incentives and disincentives are not yet adequate in larger and public institutions.

We note the promise of one particular technique for environmental enhancement of science and engineering units. We observe from our findings that coming to know a professor or administrator is especially important for women in terms of raising the probabilities of persisting to higher degrees in the physical sciences and engineering. This finding supports considerable personal testimony from science and engineering professionals, especially members of minority groups, who emphasize that it was a particular individual, usually a faculty member, who was instrumental in their science and engineering persistence and success.

Finally, in this work we have set aside value judgments on whether women and minorities *ought to* pursue educational and career goals identical to those of men, either in general or in science and engineering in particular. Rather, our intent has been to shed light on what factors can improve the prospects of underrepresented groups entering and succeeding in science and engineering fields, should they choose to do so, in other words, the enhancement of free and open choices.

Notes

¹Predicting future supply of and demand for scientists and engineers is a most hazardous task, as is shown in a recent critique of past forecasts. Although there presently appears to be adequate supply, conditions can and usually do change both often and rather quickly. What is more useful to science policy is identification and quantification of the factors that drive supply and demand. Further, apparent balances in the supply of and demand for scientists and engineers may mask poor worker quality; what may well be more important to productivity is the *quality* of those so employed (Leslie & Oaxaca, 1993).

²Full details of the samples are described in the annual CIRP reports published by the Higher Education Research Institute at UCLA, e.g., Higher Education Research Institute, 1995, and in NLSY publications of the Department of Labor and the Ohio State University, which collected the data.

³Complete tables and results are available from the authors upon request.

⁴Sample sizes for Hispanics often were relatively small and thus were relatively less reliable.

⁵Many of the studies that compose the core of existing research and present thinking are now quite dated. It is almost certain to be true that many gender-linked differences have changed as the women's movement has grown.

⁶The "macho male" construct is widely known and appears to be something more than stereotype, although the trait almost certainly is more characteristic of working-class than nonworking-class Hispanic males, who admittedly are likely to be present in greater numbers among college-goers.

⁷Clearly, marriage is a manifestation of many, many forces, only one of which is peer influence. Further, some of those other forces may well be more potent than peer influences, both in the adolescent years and later, in explaining marriage and career relationships.

⁸Because the CIRP surveys oversample women and minorities and define outcomes in different ways, the attrition rates from the CIRP data are not strictly comparable to those from the NLSY; nevertheless, CIRP female attrition rates are quite similar to those of men as well, being a few percentage points less for women than for men, in both PSME and the biological sciences. CIRP minority attrition rates follow the same general pattern; of those who begin in PSME the share who graduates in PSME is about the same as for the majority, with minority women's graduation rates being a few percentage points lower than minority men's, when compared with female and male majority rates, respectively. In the biological sciences, minority graduation rates are a bit lower than they are for the majority. The largest disparities are between Hispanic women and men, and they clearly favor the latter.

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In the Service of Citizenship

A Study of Student Involvement in Community Service

Introduction

I learn more through my volunteer work than I ever do in any of my classes at school. Talking to people from diverse backgrounds provides so much insight that people just can't imagine. I study all these different theories in political science and sociology, but until you get a chance to see how the social world influences people's everyday lives, it just doesn't have that much meaning.

I have been involved in volunteer work ever since I was in high school, and I'll probably continue to do stuff like Habitat [for Humanity] until I'm old and gray. I get a lot out of working to serve others, and it's a good feeling to know that I have helped someone even if it's in some small way. It helps me to cherish people more and understand what life is all about.

The preceding comments are from college students who discussed their involvement in community service and the meaning they derive from such activities. Both of these students give voice to a form of learning that may be termed "citizenship education" in that a concern for the social good lies at the heart of the educational experience (Delve, Mintz, & Stewart, 1990). These students are reflective of others described throughout this article who through participation in community service explore their own identities and what it means to contribute to something larger than their individual lives.

In recent years, the role of higher education as a source of citizenship preparation has come to the forefront. In this regard, higher education reflects a rising tide of concern for national service and the common

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good, as programs such as AmeriCorps, Learn and Serve America, Habitat for Humanity, and Big Brothers and Big Sisters have evoked our most prominent leaders as well as citizens across the country to commit themselves to the service of others. The influence this national movement has had on the academy is most apparent in the growth of organizations such as Campus Compact and Campus Outreach Opportunity League (COOL) whose memberships and influence increased dramatically in the early 1990s (Markus, Howard, & King, 1993). Professional organizations associated with the academic enterprise also have added fuel to the growing concern over social responsibility and citizenship. For example, in 1997 the call for proposals from the American Association for Higher Education Conference on Faculty Roles and Rewards specifically identified an interest in how community service and service learning contribute to a more engaged faculty. The 1996 Annual Meeting of the American Educational Research Association was organized around the theme of "Research for Education in a Democratic Society," and at the 1995 American College Personnel Association Annual Convention, one of the keynote speakers, Dr. Robert Coles, addressed the issue of moral education when he called for greater commitment to service learning and community service.

Although it is hard to argue with calls to foster social responsibility among our students, our future leaders, there also is a tremendous need for clarification. With this said, the following key questions offer a guide for addressing some of the confusion revolving around community service: (1) Are community service and service learning interchangeable concepts or are there important differences? (2) What is the role of community service in engaging students as democratic citizens in a culturally diverse society? (3) Are there variations in the structure of service activities which produce different experiences for students? The first question is examined as I explore the relevant literature on community service and service learning. The second and third questions are addressed primarily through discussions of the theoretical perspective, findings, and implications. Thus, the latter two questions form the heart of the theoretical and empirical analysis offered throughout this article. In weaving theoretical and empirical work together to address these questions, I follow the tradition of critical theory and support the argument that all research is theoretically rooted: Sometimes the perspective of the author is spelled out (as in this case), while at other times it must be interpreted based on the assumptions undergirding the work (Tierney & Rhoads, 1993). This is by no means a rejection of empiricism in favor of theory, but instead should be understood as an effort to bridge the gap separating the two.

Community Service and Service Learning

Over recent years there has been an incredible growth in attention paid to community service and service learning (Jacoby & Associates, 1996; Kendall, 1990; Kraft, 1996; Kraft & Swadener, 1994; Rhoads, 1997; Waterman, 1997; Zlotkowski, 1995). The increasing interest in service reflects to a large degree a concern that institutions of higher education be more responsive to society and that higher learning in general ought to have greater relevance to public life (Boyer 1987, 1994; Study Group 1984; Wingspread Group, 1993). A convincing argument could be made that for American colleges and universities a commitment to service "is a movement whose time has come" (Rhoads & Howard, 1998, p. 1).

The issue to be addressed in this brief review of the literature concerns distinguishing community service from service learning. The primary difference between these two concepts is the direct connection service learning has to the academic mission. Typically, service learning includes student participation in community service but with additional learning objectives often associated with a student's program of study. For example, a student majoring in social work may participate in service activities at a local homeless shelter in conjunction with a course of study on urban poverty. Specific activities designed to assist the student in processing his or her experience are included as part of the service learning project. The student, for example, may be expected to write a reflective paper describing the experience and/or there may be small-group interactions among students involved in similar kinds of experiences. The learning objective might be to help students interpret social and economic policies through a more advanced understanding of the lived experiences of homeless citizens. Seen in this light, service learning seeks to connect community service experiences with tangible learning outcomes. Assessing such outcomes becomes a central concern of research and evaluation (Boss, 1994; Giles & Eyler, 1994).

Although service learning often is specifically tied to classroom-related community service in which concrete learning objectives exist, some writers suggest that student involvement in community service may be tied to out-of-class learning objectives and thus constitute a form of service learning as well (Jacoby & Associates, 1996; Rhoads, 1997). From this perspective, student affairs professionals who involve students in community service activities may engage in the practice of service learning when there are clearly articulated strategies designed to bridge experiential and developmental learning. The confusion between "class-related" versus "out-of-class-related" service learning led Rhoads and

Howard (1998) to adopt the term "academic service learning" to distinguish the formal curriculum (largely faculty initiated) from the informal curriculum (largely student affairs initiated). Howard (1998), for example, defined academic service learning as "a pedagogical model that intentionally integrates academic learning and relevant community service" (p. 22). For Howard there are four components of academic service learning. First, it is a pedagogical model and is therefore to be understood as a teaching methodology. Second, academic service learning is intentional; that is, there are specific goals and objectives tying the service experience to course work. Third, there is integration between experiential and academic learning. And finally, the service experience must be relevant to the course of study. As Howard explains, "Serving in a soup kitchen is relevant for a course on social issues, but probably not for a course on civil engineering" (p. 22).

From an educational standpoint, it makes sense to link community service activities with intentional learning objectives whenever possible. Obviously, when student participation in community service can be connected to specific learning activities involving reflection, group interaction, writing, and so on, the experience is likely to have a greater impact on student learning and move into the realm of service learning (Cooper, 1998; Eyler, Giles, & Schmiede, 1996).

In addition to varying degrees of connection community service may have to academic learning objectives, there are also differing opinions on which goals of higher education service ought to address. Whereas Howard stresses the role of service as a pedagogical model used to assist in course-related learning, others see service (community service and service learning) as a key strategy for fostering citizenship (Harkavy & Benson, 1998; Mendel-Reyes, 1998; Rhoads, 1998). This vision of community service and service learning is captured most pointedly in the philosophical work of John Dewey, in which education is fundamentally linked to the social good and what it means to exist in relation to others.

Theoretical Perspective: Dewey, Mead, and Gilligan

This article is grounded in the philosophical work of John Dewey and his contention that education has a vital role to play in a democratic society. In his classic work *Democracy and Education*, Dewey argued that a democratic society demands a type of relational living in which one's decisions and actions must be made with regard to their effect on others. "A democracy is more than a form of government; it is primarily a mode of associated living, of conjoint communicated experience. The extension in

space of the number of individuals who participate in an interest so that each has to refer his own action to that of others, and to consider the action of others to give point and direction to his own" (1916, p. 93). Dewey's vision of democracy challenges all citizens to take part in a form of decision making that balances the interests of oneself with those of others. Democracy seen in this light demands that individuals understand the lives and experiences of other members of a society. How else can we weigh the effect of our actions if others remain distant and unknown?

Implied throughout Dewey's conception of democracy is an ethic-of-care philosophy akin to the work of feminist scholars such as Gilligan (1982) and Young (1990), in which caring for others forms a core component of identity (often discussed as the "relational self"). This is conveyed in Dewey's view of liberty: "Liberty is that secure release and fulfillment of personal potentialities which take place only in rich and manifold association with others" (1927, p. 150). Recent political theorists such as Battistoni (1985) also have recognized the importance of developing relational understandings of social life. For example, Battistoni supported Tocqueville's (1945) claim that American democracy is dependent upon "the reciprocal influence of men upon one another" (p. 117). For Battistoni, reciprocal influence is fostered through participatory forms of education, which he claimed are more likely to foster citizens who see themselves as active participants in the political process. Similarly, in discussing the relationship between citizenship and education, Barber argued that citizens must recognize their dependence upon one another and that "our identity is forged through a dialectical relationship with others" (1992, p. 4). Barber calls attention to the idea that citizenship is fundamentally tied to identity. Mead and Gilligan provide additional insight into the connection between citizenship and identity through their respective concepts of the "social self" and the "relational self."

Mead's (1934) idea of the social self derives in part from James (1890) and Cooley (1902), who both suggested that an individual's self-conception derives from the responses of others mirrored back to the individual. Mead argued that the self forms out of the interaction between the "I" and the "me." The "I" is the individual acting out some sort of behavior; the individual doing something such as talking, listening, interacting with others, expressing an idea. The "me" relates to the sense one has about the "I" who is acting out a behavior or set of behaviors. The sense we develop about the "I" derives from the interpretations we suspect that others have of us. We cannot develop an initial sense about ourselves without the help of others, who provide feedback and interact with the behaving "I." Through the imagined thoughts of others, we envision ourselves as a "me" as we become the object of our own thoughts.

According to Mead, an individual cannot develop a sense of self without the interactive context of a social group or a community. Therefore, the other, either the particularized or generalized other, is essential to the development of the self.

Feminist theorists such as Gilligan also have developed a conception of the self strongly rooted in otherness. Gilligan (1979, 1982) was one of the first theorists to point out that women often make moral decisions based on a sense of connection with others. She argued that women's moral decision making reflected a fundamental identity difference based on gender. Whereas men tend to seek autonomy and make moral decisions founded on abstract principles such as justice, women, in general, seek connectedness and weigh moral decisions based on maintaining or building relationships.

As a result of early child-parent interactions and ongoing gender socialization (which arguably begins at birth), relationships become central to the social world of women (Chodorow, 1974, 1978). For men, the relational quality of social life is often displaced by a strong sense of individualism. The other is fundamentally a part of women's experience and kept at somewhat of a distance for men. The development of the self for females may be characterized by connectedness. Male development may be characterized by individuation. These general patterns (which obviously vary in degree from one individual to the next) have significant implications for how males and females relate to others and how they understand themselves in the context of the social world.

Based in part on early feminist work, various scholars have argued that regardless of gender differences, society is likely to benefit when its members develop a commitment to caring (Larrabee, 1993; Noddings, 1984, 1992, 1995; Oliner & Oliner, 1995). This is poignantly noted by Sampson (1989), who argued,

The feminist perspective should no longer be understood as developing a psychology of women but, I believe, is better seen as developing a psychology of humanity tomorrow. The real issue, therefore, does not involve gender differences per se, as much as it speaks to an emerging theory of the person that is appropriate to the newly emerging shape of a globally linked world system. (p. 920)

Of course, Sampson's point about the "globally linked world" reminds us of an earlier issue raised in this article concerning how cultural diversity might influence citizenship education (recall key question Number 2: What is the role of community service in engaging students as democratic citizens in a culturally diverse society?). Arguably, as a society grows increasingly diverse, communications are likely to become more

challenging. Cultural differences, though they may be understood as a source of community for learning and sharing among citizens (Tierney, 1993), nonetheless pose a significant challenge to social interaction and an individual's ability to connect with the other, who, in the case of a heterogeneous society, is likely to be a diverse other.

Woven together, Dewey, Mead, and Gilligan, among others, provide insight into how citizenship education might encompass learning about the self, the other, and the larger society in which one exists. The "caring self" is the term I use to capture the synthesis of their work. The caring self is intended to convey the idea of a socially oriented sense of self founded on an ethic of care and a commitment to the social good. Furthermore, it is reasonable to assume that community service, with its focus on caring for others, would offer excellent settings to explore the development of the caring self. But is this the case, and if so, in what kinds of service contexts are the qualities associated with the caring self likely to be forged?

This brings me to the crux of my argument and what I intend to shed light on through a study of student involvement in community service. Arguably, unless individuals have a deep sense of caring for others, it is less likely that they will engage in interactions with diverse others in a meaningful way. Caring may be seen as the solution to the challenge presented by a postmodern society characterized by difference. In essence, I contend that fostering a deep commitment to caring is the postmodern developmental dilemma all of education faces, including higher education. If we are to promote democratic citizenship in these challenging times, then we must foster in our citizens a commitment to caring. Higher education has a major part to play in this process, and involving students in community service may be one vehicle for meeting this challenge. The question that needs to be asked then, is, How and in what kinds of community service settings is caring to be fostered? Before addressing this question through a discussion of the findings, I first clarify the methodology used in conducting the study.

Methodology

The primary goal of this article is to advance understanding of community service as a strategy for citizenship education. Through a qualitative study of college students involved in community service, I shed light on various facets of the service context that may be most beneficial to challenging students as caring citizens. The focus is not on student learning per se; instead, I target the kind of meaning students construct about their service encounters as a means to identify important aspects of com-

munity service associated with caring. I need to be clear here. This article does not attempt to assess developmental change by examining student involvement in community service. Although such a strategy is important and falls in line with the tradition of student outcomes research (Astin, 1979, 1993; Feldman & Newcomb, 1970; Pascarella & Terenzini, 1991), this article takes more of a phenomenological direction in which the essence of community service is the primary concern. Hence, the kind of experiences students describe are important in this study, not as learning outcomes, but as indications of the nature of the service context.

The data for this article were derived from research and participation in community service projects conducted in conjunction with three universities: Pennsylvania State University, the University of South Carolina, and Michigan State University. Community service projects ranged from week-long intensive experiences requiring travel to distant out-of-state communities to ongoing student service projects in the local communities or states in which these universities are situated. I participated as a volunteer in many of the service projects described throughout this article. My role ranged from a staff supervisor in a few cases to that of a graduate student volunteer with limited responsibility in other instances. In every case, my primary role was as a volunteer and not as a researcher; the data I collected was more of an outgrowth of the community service experience and was not the central objective. The comments here are not meant to shortchange the research strategy employed, but instead are intended to clarify for the reader the context of my interactions and involvement with the student volunteers. In fact, my role as a volunteer may actually add strength to the naturalistic strategies used in collecting data as I was able to engage in ongoing and meaningful dialogue with the research participants (Denzin, 1989).

Based on the methodological strategies associated with naturalistic inquiry, data were collected using a variety of techniques, including formal and informal interviews, surveys, participant observation, and document analysis (Lincoln & Guba, 1985). The principal documents used as a source of data were journals students were asked to keep as part of their community service experience. The use of multiple data collection techniques provides a degree of triangulation and offers the researcher an opportunity to confirm or reject tentative interpretations (Denzin, 1989).

The early phase of the study was conducted in conjunction with Pennsylvania State University and the data obtained was part of a formal evaluation of community service activities by students. This phase of the project involved surveys of students' experiences and was considered program evaluation and as such did not require human subject approval at Penn State. The second phase, which primarily involved interviews and observations, necessitated gaining human subject approval. Students

were informed of the study and given the opportunity to participate or decline. It was during this phase of the study that student journals were used, but only with student approval.

During the six-year period (1991–1996) in which data were collected, 108 students participated in interviews, 66 students completed open-ended surveys, and more than 200 students were observed at various project sites in which participant observation was central. Approximately 90% of the students involved in the community service projects were undergraduates, and about 10% were graduate students. The vast majority (approximately 80%) of the undergraduates were traditional-age students in the range of 18 to 24 years old. Females represented approximately 60% of the sample, and in terms of race, the majority were Caucasian (roughly 85%), with African Americans constituting the largest minority group—about 8 to 10% of the overall group.

Interview transcripts (from both formal and informal interviews), open-ended surveys, field notes from participant observation, student journals, and documents collected in conjunction with various service projects form the entire data base for the study. Once collected, the data were read repeatedly in an effort to identify important and relevant themes. The process followed the kind of analytical strategy stressed in the work of cultural anthropologists and interpretivists (Geertz, 1973; Rosaldo, 1989). Specifically, themes were identified based on their contextual significance and relevance to the overall goal of the project: *to better understand the context of community service and how such activities might challenge students' understandings of citizenship and the social good*. In a procedure described by Lincoln and Guba (1985) as “member checks,” themes and interpretations were shared with several students as part of a process to obtain feedback and incorporate student reactions into the final manuscripts.

Based on the data analysis, several themes were identified. Three of those themes—students' explorations of the self, understandings of others, and views of the social good—form the basis for this article. Other issues, such as “student motivation” for getting involved in community service and “attitudes toward community service,” are examples of additional themes that emerged from the data analysis but are peripheral to this article and thus are not discussed in any substantive way.

Findings

In keeping with the theoretical concern of democratic citizenship and fostering more caring selves, the findings are organized around three general concerns suggested by students in discussing their participation in community service: self-exploration, understanding others, and the

social good. These themes are highly interactive and, in general, students' exploration in all of these areas contributes to understanding what I describe as the caring self.

Self-Exploration

Participation in community service is an educational activity that lends itself to identity clarification. For example, a student who was part of an intensive week-long community service project in South Carolina talked about identity issues and her participation in the project: "I'm kind of in a search for my own identity, and this trip is part of that search. I just don't know quite who I am yet. I'm struggling to figure it all out. These kinds of experiences help. I'm most genuine in these kinds of settings." Another student added, "Getting involved in community service helps me to get back in touch with who I really am. It reminds me that I have more to live for than merely myself." A third student offered the following comments:

I've always done service work. During my freshman year at USC [University of South Carolina] I worked on the City Year project and the Serv-a-thon. I believe service is an important part of leadership. It's important to give back to the community. The last four weeks I've been totally into myself, like running for vice president of the student body. I signed up for this project because I wanted to get outside myself for awhile.

This student saw the service project as an opportunity to connect with others and in her words "get outside" of herself. For her, the service project offered a chance to become more other-focused and to contribute to her community.

A second student described her involvement in community service as part of a journey to better understand herself: "My work as a volunteer has really helped me to see that I have so much more to understand about myself in order to grow. I'm still on the journey and have a long way to go." And a third student discussed what he learned about himself: "I got involved in volunteerism because I wanted to learn more about myself. I've learned how to love a wide range of people despite differences between us. I've learned not to be judgmental." A fourth offered insight into the kind of soul searching students often go through as a result of service work:

Sometimes I feel like I'm only fooling myself and that I'm really only into service so that I can help myself. I list this stuff on my resume and I feel guilty because I know it will help me get a teaching job. Is that why I do this? I know it makes me feel better about what I do in my spare time, but who am I really serving?

This student recognized, like others, the positive returns of service, not only in terms of experience helpful for landing employment, but for the feelings reflected back to the self.

Self-exploration through community service often involved a kind of self-interrogation that helped students to think more seriously about their lives. Listen to the following student as she recalled her volunteer work with troubled youth:

I got involved in a lot of self-esteem work, primarily with teenagers. It helped me to think more seriously about my understanding of myself and how others think of me. I began to wonder about what kind of person I was and was going to be. I began to ask questions of myself: "Am I too judgmental? Am I open to others? Am I sensitive to how other people see the world?"

Once again, the role of community service in challenging one's sense of self is clear. Equally clear is how one's sense of self is tied to the social context and the views others hold of us.

Understanding Others

A significant learning experience associated with community service was the opportunity to better understand the lives students worked to serve. Students were able to put faces and names with the alarming statistics and endless policy debates about homelessness as well as rural and urban poverty. As one student explained,

Expressing what it has meant to me to actually have the chance to engage in conversations with people who used to be total strangers is next to impossible. It has been eye opening. My understanding of homeless people was based on what I'd see on the news, in magazines, or on TV shows. They were not real people and I could easily turn my back on them and the problem in general.

Similar comments were offered by Penn State and Michigan State students involved in community service projects working with homeless citizens in DC, Louisville, and New York City:

Every homeless person has a name, a story.

They just want to be recognized and treated as human beings. There are names behind the statistics.

Working with the people of the streets has transformed "those people" into real faces, real lives, and real friends. I can no longer confront the issue without seeing the faces of my new friends. This has an incredible effect on my impetus to help.

All the statistics about homeless people and the stories of people freezing to death in the winter never really sunk in until I made friends with Harry and Reggie. There are faces now.

Students who worked in rural areas with low-income families also derived benefit from personal interactions with those they worked to serve. One student commented on the general outcomes associated with having personal interactions in service settings: "The whole experience helps you to see that others are real people and have real problems and yet can come together to help one another. . . . When you work with the people on their houses or in their back yard it adds to the experience. You get a chance to know the people. You have a face or a personality to go with the work." A second student stated, "The fact that we were able to interact a great deal with the people in the community added so much to the overall experience. I've done volunteer work in the past where I never really got the chance to meet with the people who I was actually trying to help." A third student, who participated in a week-long service project in a low-income rural area, added, "This week has taught me so much about other people and the problems they face in life. You can read about growing up poor, but getting to share a conversation with someone who has overcome so much during their lifetime is quite a different matter. . . . It's made me much less judgmental of others and their place in life."

A common point made by students was the fact that community service work with people of diverse cultural backgrounds forced students to confront generalizations they had of the other. For example, students talked about various stereotypes they held about poor people and how such stereotypes were erased as a result of their service work. Several students noted how surprised they were to find so many intelligent and educated people without jobs or places to live. One student maintained that the only accurate stereotype relates to the amount of bad luck that most homeless people have experienced. A second added, "I learned that all people are innately afraid and that no one deserves to be without a voice and a safe place and that stereotypes can be more damaging than can be fathomed." A third student talked about how his preconceptions about homeless people had been shattered through his interactions with them. As he explained, "This experience gave my beliefs and convictions about the homeless a personal basis that I'll never forget."

Many of the preconceptions students had about the poor were rooted in their limited experience with cultural diversity. Although socioeconomic factors were the primary source of difference between students and community members, race was another factor. Interactions with a variety of low-income individuals and families often challenged students' conceptions of the diverse other. Because the vast majority of the student volunteers were Caucasians and many of the community members served by the students were African Americans, a number of racial issues emerged from time to time. A Penn State sophomore talked about the dif-

ference she felt between herself and the large number of homeless African Americans she encountered during her volunteer work in DC: "I definitely felt a major barrier between Blacks and Whites in this country. There were times working in the soup kitchens where I felt very uncomfortable." A college junior studying mathematics commented on a similar feeling: "It was an experience for me simply to be placed in the awkward environment of walking around in predominantly African American, poor neighborhoods. I want to remember that feeling of insecurity. It reminds me of the vast differences between races in our society."

Often, issues of race and class blended together and challenged students' prejudices in a multifaceted way. Listen to the following two students discuss their experiences:

There is something that I'm not proud of and I always considered myself open-minded and not prejudiced, but when I worked at Sharon's house [Sharon is an African American woman who needed repairs done to her home] it reminded me that some of my previous thinking about the poor had been based on stereotypes. I mean I've always kind of thought in the back of my mind that people become poor or destitute because they are not motivated or not as intelligent. But Sharon has a master's degree and is very articulate. I see now that there may be many causes or barriers that people face that can limit them. It was an eye opener and I see now that I was carrying this misconception about them being to blame for their plight.

Meeting homeless people and talking with them taught me that some of my stereotypes about the poor, about Blacks, have been rooted in my own life of White, middle-class privilege. I have never had to work that hard to get a college education, for example, yet I've bought into the idea that others who have less than me are somehow lazy because they are poor. Heck, they may have worked twice as hard as I have. I've never really had my views of the poor challenged until this experience working with homeless people.

The generalizations and stereotypes to which students referred were seen by several as the by-product of the media. As one student, a senior in geography, pointed out, "I learned that my perceptions of poverty, crime, and homelessness are influenced and perhaps shaped by misconstrued images that I see on television." Another student also talked about how television had played a major role in how she had come to envision African Americans. She pointed out that in her rural Pennsylvania community, "there wasn't a single African American family. I never even met an African American until I attended college."

The Social Good

As one might expect, given the context of caring for others, issues related to the social good often surfaced. Community service is ripe for such discussions and offers a context conducive to serious thought about

the larger social body. One student offered an example of the kind of serious thought that may evolve from community service work:

There are a lot of people in this country who need help to make ends meet. You can choose to help them or you can turn your back on them. I want to help people, and I want those who choose not to help to know that there are consequences for walking away. There are children who will go hungry and people who will be living in the streets. I cannot live with that on my conscience.

For this student, the social good suggests a world in which no one starves or goes homeless. Giving up some of his own time and energy to help others "make it" is in line with his vision of social responsibility.

Other students offered similar remarks about the social good. For example, one student commented, "Intellectual exploration has been rewarding but also suffocating at times and so I find the desire to commit myself to experiential work. I found one way could be by working in a homeless shelter and understanding social issues from a political standpoint as well as from the perspective of those living and breathing poverty."

For another student, the common good included the role of education in assisting the poor. He saw service as important, but there were deeper issues underlying poverty. He explained,

Service activities are important, but we also have to help teach people how to fish. You just can't give people food or build houses for them without also helping them develop the skills to take care of their own lives and their own families. . . . Part of my goal is to help others to develop their own abilities so that they can lead productive lives.

This student alludes to the idea that simply providing "bandages," though important and necessary, may not heal deeper wounds. In this case, the student highlights how sometimes the problems rest with the poor and their limited skills.

Other students also concerned with the deeper roots of economic inequities chose to focus on social structure instead of individuals as part of their effort to make sense of the social good. For example, one student saw community service as a stepping stone to larger work for social change: "I need to be in community with people who are interested in radical social change. Together we can work and witness all kinds of changes, and perhaps come closer to finding some answers." Another student alluded to the structural aspects of poverty as she discussed her learning experiences:

Community service is something that I think everybody should get involved doing. You see a different side of our country when you see some of the struggles the poor face. You begin to understand the barriers to their economic situation and why it is so hard to get out of poverty. I talked to this one woman, and she explained to me how expensive day care is for her children and that in order for her to take a job she needs to make at least eight to ten dollars an hour. And no one will pay her that.

For the preceding student, community service experience helped her identify a structural problem that limits low-income workers—the lack of affordable day care.

Not everyone who participated in this study saw service as necessarily a positive force for improving society. Listen to the following student take issue with some of the general comments he heard about the positive aspects of service:

To be honest, and it's hard to say this around all these "do gooders," I'm not sure all this volunteer stuff really does a whole lot of good. I know, I'm one of those volunteers too. But I keep asking myself a bunch of questions: "Am I doing this to help the homeless or am I doing this to help myself? Who really benefits?" Maybe I'm being too skeptical, but I think most of the students here are like me but won't admit it. It makes them feel good to help feed someone, and that way they can go back to living their happy little lives without feeling too guilty.

Despite the biting cynicism of the preceding student's comments, he makes an important point that turns our attention back to the theoretical thrust of this article: The idea that one often develops positive feelings about oneself as a result of involvement in service reminds us that our sense of self indeed is tied to others. When warm feelings are shared with a student engaged in service, then logically, that student may see him or herself in a more favorable manner. The interactional context is one reason why community service is so critical to forging more caring selves. Through acts designed to serve others, students learn to feel better about themselves. At the same time, their relationship to others and to the larger social body is strengthened. Hopefully, reaching out becomes a way of life and the diversity that offers the potential to divide one from another becomes instead a source of sharing. This is the essence of the caring self.

Implications for Structuring Community Service

As noted earlier, this study was phenomenological in nature. The study did not seek to determine whether students become more caring citizens as

a result of their service. Instead, by approaching the subject phenomenologically, I was able to identify aspects of the community service context that might contribute to students' considerations of the self, others, and the social good. The underlying assumption of course is that such considerations are likely to contribute positively to one's ongoing development as a caring citizen. Thus, in thinking about the implications of the findings I was able to identify three structural components of community service that appear to be critical to advancing citizenship as defined in this article. These key components are *mutuality*, *reflection*, and *personalization*.

There are two aspects of mutuality I stress: One aspect relates to a recognition that both parties—the so called “doers” and the “done to,” in Radest's (1993) terms—benefit from the service encounter. Students involved in service receive incredible rewards for their work in the form of personal satisfaction. And, if their work is effective, community members also receive rewards in the form of a service provided. Thus, one might say that the experience is mutual.

The gifts that students receive through their community service offerings are not without complications. Students frequently expressed a degree of guilt for feeling good about themselves as a result of their service to others. A line from the great American poet, Delmore Schwartz, comes to mind here: “Nothing is given which is not taken.” Taking or “receiving” the gifts offered by community members is something students engaged in service must learn to do. In fact, effective leadership training for students ought to prepare them to be recipients of the rewards of service. “In giving, one must learn to receive,” noted one student who worked with homeless citizens in Washington, DC.

The second aspect of mutuality relates to the structure of the relationship between service providers and community members who may receive a specific service. Too often we are guilty of determining the needs of those to be served with little to no involvement on their part. For community service to be most effective for the development of caring citizens, then, the planning of such activities ought to include those to be served in an equal and empowering manner. After all, Dewey's conception of democracy entails each person taking others into consideration when making decisions affecting the public realm.

A second key to making community service most effective for citizenship development is the inclusion of reflection as part of the service work. By the term “reflection” I refer to activities designed to help students process their service experiences in a manner involving serious thought. Small-group discussions and writing assignments are common tools used to foster student reflection. As is noted earlier in this article, community service that incorporates reflection moves closer to what is

typically considered service learning in that the reflective activity helps to link service to an educational outcome.

Several of the service projects observed through this study did not involve structured reflection and the students' experiences suffered. One example occurred in New York City, where a young woman became so intimidated by her interactions with a homeless man who screamed profanities at her that she vowed to never again work with the homeless. The project she worked on was led entirely by students and there was no opportunity for guided reflection. In interviewing this student, I was left to ponder how her reaction might have been different had she been able to interact with an experienced facilitator. Would she have been able to work through her feelings and perhaps take something positive from the traumatic encounter?

Other examples from this study reveal the power of reflection. Recently, I accompanied a group of 23 students from Michigan State University to Merida in the Yucatan where we worked at a Salvation Army shelter for children, a low-income health facility, and a women's resource center. As part of helping MSU students process their experiences, staff volunteers facilitated reflection groups each evening after students returned from their work sites. At the end of the week, we evaluated the project and consistently students described the reflection activities as one of the highlights of their cross-cultural experience (despite the "educational" overtones such activities carried!).

Perhaps the most significant aspect of community service that I found to contribute to caring is what may be called the personalization of service. For community service to be challenging to a student's sense of self, it seems most beneficial for service to involve opportunities for meaningful interaction with those individuals to be served. Time and time again students discussed how significant it was for them to have the opportunity to interact with individuals and families on a personal basis.

Conclusion

The challenge of education to foster caring citizens has taken on enormous proportion in contemporary society as the struggle between individualism and social responsibility has taken on new meaning (Bellah, Sullivan, Swidler, & Tipton, 1985; Coles, 1993; Palmer, 1993; Parks Daloz, Keen, Keen, & Daloz Parks, 1996; Wuthnow, 1991, 1995). Community service is one option educators can select to enhance the development of citizens concerned with the social good. Caring is central to the effectiveness of community service, and thus students are challenged to give serious thought to what it means to care as they struggle to eval-

uate their commitment to the lives of others. Because the relationship between individuals and their obligation to one another is a cornerstone of democracy, community service may be seen to contribute to citizenship in a democratic society.

The students in this study highlight how cultural diversity poses additional challenges to one's development as a caring citizen. They described how community service often is an interaction between diverse others. This is the essence of Radest's (1993) argument when he maintained that community service may be seen as an "encounter with strangers" in which the challenge of service is that we each learn from the other and we each give as well as receive. From this perspective, community service represents a dialogical encounter with diverse others and serves as a bridge to build communal ties. Thus, community service offers one vehicle for preparing students to communicate in a culturally diverse world.

Finally, because service encourages students to see themselves as intimately connected to the other, a learning context is created in which the caring self is more likely to emerge. Fostering a sense of self grounded in an ethic of care is one of the central challenges of education and becomes increasingly important as our society grows more diverse. By fostering an ethic of care, higher education encourages the sense of otherness needed for democracy to survive and, indeed, thrive in a complex and fragmented social world.

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Cultural Barriers Facing Lesbian, Gay, and Bisexual Students at a Catholic College

The guys I lived with my sophomore year made statements like, "No one at St. James is gay." They really thought that, and I was living with them. They just were very sure that no one who was gay would come here.

Dave, founding member of the Gay, Lesbian, and Bisexual Alliance

Dave¹ was a senior at St. James College,² a religiously affiliated institution (RAI), and part of a group trying to establish a gay, lesbian, and bisexual alliance. Invisibility was but one of the obstacles he and other students had to overcome. Quentin, a psychology professor and former residence hall chaplain, knew of other barriers at St. James—in this case assumptions related to Catholicism—faced by lesbian, gay, and bisexual (LGB) students. During his first year as a residence hall chaplain, Quentin knew of no students who were out, though he did know of several students who had attempted to take their own lives because of their sexual orientation. He described an incident where a student tried unsuccessfully to hang himself with a belt. Quentin had become aware of the situation and, in consultation with the counseling center, confronted the student. The student almost immediately began to cry and broke down telling Quentin, "It's horrible. I can't cut it." Quentin responded, "Well, maybe I can help you. . . . Could it have something to do with sexual orientation?" And the student said, "Yes, but you don't know what it's like. You don't know. The church con-

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demns it. It's sinful." The student would not give Quentin his word that he would not make another suicide attempt, claiming Quentin did not understand what his life was like. So Quentin told the student he also was gay. It was the first time Quentin ever came out to a student.

St. James College experienced a period of ferment regarding the issue of sexual orientation between the fall of 1991 and the fall of 1993. For the first time in the memories of long-time members of the institution, sexual orientation was a topic of public discussion and a focus of organizing, training, and programming. People Against Homophobia (a faculty and staff "allies" group) formed in the fall of 1991. During their first year they helped add sexual orientation to the institution's nondiscrimination clause, produced "People Against Homophobia" buttons that they wore and distributed on campus, and secured funding for and invited a national speaker to campus to discuss self-esteem issues of lesbian and gay students. Residence life, through professional and paraprofessional staff, conducted training and programming in the area of sexual orientation. Students Against Homophobia (a student "allies" group) and the Continuum Group (a counseling center based support group for lesbian, gay, and bisexual students) were established during the fall of 1992. Also during the fall semester, the Student Senate sponsored a Diversity Forum to which Students Against Homophobia was invited. By the spring of 1993, a faculty member (Quentin) had come out in the context of a class, several other students had come out on campus, and a group of lesbian, gay, and bisexual students had left the Continuum Group and had begun working to establish the Gay, Lesbian, and Bisexual Alliance [GLBA] of St. James College.

However, by fall semester 1993 organizing had waned. The GLBA never coalesced, People Against Homophobia (PAH) stopped meeting, Students Against Homophobia (SAH) had their only meeting of the semester in November, and discussion and programming had dramatically diminished on campus. This study discovered the organizational cultural barriers facing those individuals and groups addressing sexual orientation at St. James and explored the cultural dynamics that played a part in diminishing activity related to sexual orientation at this religiously affiliated institution.

Religiously Affiliated Institutions and Sexual Orientation

All colleges and universities exist within a societal culture that is homophobic and heterosexist, and so all institutions struggle in some way with issues related to sexual orientation. Religiously affiliated institutions are perceived to be even less friendly places for lesbian, gay, and

bisexual people. This is no surprise. The surprise to Dave's roommates and others is that LGB students, faculty, and staff attend, teach, and work at religiously affiliated colleges. Like such individuals at most secular institutions, they are faced with oppressive, nonsupportive, homophobic cultures in which they are made to feel invisible and isolated (Norris, 1992; Rhoads, 1994). Many students leave. Others contemplate, attempt, or commit suicide (Gibson, 1989; Saunders & Valente, 1987). Some stay and struggle to develop, despite the lack of a supportive environment.

Religiously affiliated colleges vary widely. Lumping them together masks as much diversity as lumping together all liberal arts colleges. This is especially the case when examining the way in which they deal with the issue of sexual orientation. At one extreme there are those institutions, such as bible colleges and fundamentalist schools, where beliefs about homosexuality are very clear and consistent: it is a choice, it is wrong, it is immoral, and the bible specifies it to be a sin (Maret, 1984). At the other end of this continuum are institutions, such as some of those founded in the Quaker tradition, that tend to be more open to and accepting of the diversity of individuals who exist in the world and to see sexual orientation as one element of that diversity. Of course, many institutions fall between the extremes and comprise the bulk of RAIs in the United States.

Research on the experiences of lesbian, gay, and bisexual students, faculty, and staff traditionally has been constrained due to the stigma attached to homosexuality (Herdt, 1989), the forced invisibility of this population, and the taboo nature of discussing oppression due to sexual orientation (Evans & Wall, 1991). Recently, Rhoads (1994, 1995), D'Augelli (1989a, 1989b), and others have explored the experiences of LGB students at large universities. Both Rhoads and D'Augelli highlight the struggles faced by lesbian, gay, and bisexual students in and outside the classroom. However, there is virtually no research that examines RAIs and their relationship to students who identify as lesbian, gay, or bisexual. The issue of religion—in the case of St. James, Catholicism—presents a great challenge to people trying to address the issue of sexual orientation at RAIs (D'Emilio, 1992; Gramick, 1983; Maret, 1984; Norris, 1992). For example, in the case of Catholicism homosexuality has been identified as an "intrinsic disorder" (Giurlanda, 1993). Additionally, some LGB students only come to grips with their sexual orientation after going to college, because many LGB students remain closeted (to themselves and others) until their college years (D'Augelli, 1991). Therefore, some of these students end up on campuses least able to help them; campuses that may label them as intrinsically disordered.

This study took place at St. James College during the spring and fall

of 1993. St. James is a liberal arts college of 2,200 students located in the northeastern United States, in a suburb of a moderate-sized urban area. Most students are white, Catholic, and come from working- or middle-class families. It is a college in "the Catholic tradition." That is, although it no longer has formal ties with the Catholic church, its history, traditions, and values are grounded in their Catholic origin, and students, parents, and alumni still consider it a Catholic college. Catholic colleges comprise the largest percentage (33%) of RAIs in the United States (Guthrie, 1992). The founding order was invited by the local bishop early in this century to establish a college. Therefore, a long history exists of influence by the local community beyond the college. Priests of the founding denomination reside on campus, serve on the faculty, and only their members have served as president of the institution. Priests from the local diocese (including one of the bishops) serve on the board of trustees.

I pursued this study when I became aware, through colleagues working at St. James, that some students were working to establish a Gay, Lesbian, and Bisexual Alliance. Given that culture is easier to identify during times of transition or conflict (Love, 1991), the emergence of the GLBA and the previously mentioned groups presented an ideal opportunity to study through live interviews on location the culture of an RAI, cultural resistance, and possible culture change.

Methods

Investigating culture requires discovering and understanding the meanings that people give to their experiences. This involves identifying shared meaning, beliefs, values, and assumptions related to organizational experiences. Uncovering these meanings, beliefs, values, and assumptions requires the prolonged contact, in-depth interviews, and empathic listening employed in qualitative research.

Data Collection

Data collection began in March 1993 and continued until December 1993. Data were gathered through interviews and observations. The process of participant selection began with students who self-identified as lesbian, gay, or bisexual and were working to develop the Gay, Lesbian, and Bisexual Alliance (GLBA) of St. James College. Additional participants were selected both purposively (Patton, 1980) and through snowball sampling, in that those students identified other people who were supportive of efforts to address sexual orientation matters (Dobbert, 1984; Whitt & Kuh, 1991). I also invited members of Students

Against Homophobia to participate. Faculty and professional staff who were identified as supporters by participants were contacted and asked to take part in the study. Early on, I decided to focus the study on lesbian, gay, and bisexual students, faculty, staff, and their supporters, because I was interested in studying their experiences and their perceptions of actions, behaviors, and the environment, perceptions that were indicative of the culture. Therefore, no individuals resistant to the actions related to sexual orientation on campus were included in this study.

Twenty-six people were interviewed, some were interviewed on more than one occasion (a total of 41 interviews). These included the four founding members of the GLBA; nine members of Students Against Homophobia; the Student Senate president; the chairperson of the student programming committee; four administrators (which included three members of People Against Homophobia, including the two cofounders [the director of the counseling center and a campus minister] and the moderator of Students Against Homophobia); the academic dean; and six faculty (three of whom were members of People Against Homophobia).

Based on the interviews with gay, lesbian, bisexual, and ally faculty, staff, and students, it was discovered that there was neither an "out" nor an underground LGB community at St. James.³ Most lesbian, gay, and bisexual individuals were isolated on campus, though some faculty had connections to communities beyond the campus. Given this lack of community, the opportunity in which to participate and observe the activities of lesbian, gay, and bisexual students as a group was extremely limited. However, six events were observed—three residence hall programs related to sexual orientation, one campuswide program related to sexual orientation, and two meetings of Students Against Homophobia. These events were helpful in examining how both the lesbian, gay, and bisexual students and the straight students working on this issue dealt with the greater public within the college community and also helped to triangulate the information gathered through interviews.

Data Analysis

Data analysis proceeded concurrently with data collection, using unifying and categorizing methods adapted from Guba and Lincoln's (1989) constructivist inquiry methodology and Glaser and Strauss's constant comparative method (1967; Strauss & Corbin, 1990). The first round of interviews was conducted during the spring semester with six people, including the four students working to establish the GLBA, a faculty member involved in campus sexual orientation issues, and the advisor to Students Against Homophobia. The interview protocol for these initial interviews was open-ended (Spradley, 1979). Following this

round of interviews, I analyzed the transcripts for the values, beliefs, and assumptions related to sexual orientation issues at St. James. The transcripts and the themes and categories were returned to the initial interviewees for reaction and comment. The preliminary analysis and feedback from the participants shaped the interview protocols for subsequent rounds of interviews. Data collection and analysis continued throughout the summer and the fall 1993 semester.

Authenticity and Trustworthiness

In order to enhance the study's authenticity and trustworthiness (Guba & Lincoln, 1989), which are qualitative equivalents of reliability and validity, I focused on incorporating the criteria of fairness (openly negotiating emerging themes and categories with participants), ontological authenticity (reflecting back to key informants' elaborated constructions of their experience—themes, categories, and subsequent analysis), and educative authenticity (expanding participants' appreciation for constructions beyond their own, most specifically a more conscious understanding of one examination of the institution's culture related to sexual orientation). Actions included returning transcripts to most participants for their review (several students indicated no desire to review their transcripts). Eleven participants returned transcripts with notes of correction and clarification. I also discussed emerging categories with six participants and provided an initial report of the study to four key informants for their reaction and critique. Analysis resulted in a picture of a culture that exhibited significant barriers to addressing the issue of sexual orientation.

Organizational Culture

The analytical lens for this study was organizational culture. Kuh and Whitt (1988) defined culture as "the collective, mutually shaping patterns of norms, values, practices, beliefs, and assumptions that guide the behavior of individuals and groups in an institute of higher education and provide a frame of reference within which to interpret the meaning of events and actions on and off campus" (pp. 12–13). Giroux (1983) included the concepts of power and influence in his definition of culture, in that culture exists "within a social sphere of contestation and struggle, a sphere rooted in a complex of power relations that influence and condition lived experience" (p. 164). Therefore, culture is a dynamic entity where power and influence help to determine appropriate frames of reference and appropriate norms, behaviors, and actions. Culture is then a form of social control (Foucault, 1979), in that there are accepted and val-

ued ways of doing things, topics of conversation, and activities. Social control is achieved by inducing in organizational members "a state of conscious and permanent awareness of expectations and social repercussions" (Rhoads, 1994, p. 28). Culture exerts an equivalent and opposite influence on non-normative actions. Included among these non-normative actions at St. James was the fact that several students and one member of the faculty came out, people organized into groups dealing with sexual orientation, and sexual orientation was the topic of discussion (in PAH, SAH, the Continuum Group, the Student Senate Diversity Forum), programming (by PAH, SAH, residence life), and training (in residence life).

These non-normative actions were attempts to change patterns and frames of reference; they were attempts to change the culture. Though typically stable, culture is constantly changing, evolving, and being shaped through the interactions and experiences of members of the culture (Smircich, 1983). However, as Schein (1992) has pointed out, due to its subconscious nature, culture is difficult to identify and even more difficult to change systematically or in a particular direction. Culture also exists on and exerts influence from many levels, including society, geographic region, institution, organization, and group.

Culture provided the lens through which the stream of activity in the institution was interpreted by its members. A cultural perspective was especially important for making sense of this particular situation, because on this campus no documents or official policy prohibited discussing, organizing, or programming about homosexuality. For most of the institution's history, though, the issue had not been talked about, and by the fall 1993 semester organizing waned and discussion and programming dramatically diminished on campus. The institution's administration never announced that the GLBA could not form, but it never did. The institution's culture asserted itself.

I argue that traditional notions of culture and culture change do not adequately address the issue of resistance to and attempts to change a dominant culture from within that culture. The literature recognizes the importance of working from the margins or from outside the culture to change culture (e.g., Freire, 1970; Giroux, 1992; Rhoads, 1994) but does not address the experiences of those who attempt to change culture while desiring to remain a part of the culture. This is an important consideration for culture change related to sexual orientation. Whereas other, visible cultural "minorities" (e.g., women, people of color, mobility impaired individuals) may be forced to the margins, the invisibility of sexual orientation to some degree introduces an element of choice about whether an individual resists the dominant culture and from where an individual or group attempts to change the culture of an institution.

The literature is also relatively silent on the relationship among and influence of the varying "levels" of culture—in this case societal and institutional—on each other as they relate to the lived experience of members and attempts to change institutional culture related to sexual orientation. The impact of societal culture on lesbian, gay, and bisexual people has been described (e.g., Herdt, 1992; Herek, 1989), as has the impact of various institutional cultures (e.g., D'Augelli, 1989a, 1989b; Norris, 1992; Rhoads, 1994). However, to what degree societal culture is tightly or loosely coupled with institutional culture, how societal culture is played out through institutional culture, and what role societal culture plays in attempts to change institutional culture are issues that have not been explored, and their importance became evident due to the religiously affiliated nature of St. James.

Eight interrelated cultural barriers were discovered that served to reassert the culture's dominance and suppress the visibility of lesbian, gay, and bisexual issues at this campus. Other research (e.g., Blumenfeld, 1992; Herek, 1989) indicates that the first five cultural barriers—labeled "societal cultural barriers"—are pervasive throughout society and evidenced at other colleges and universities (Rhoads, 1994). The last three—labeled "institutional cultural barriers"—related more closely to the religiously affiliated nature of St. James and served to channel and intensify the societal barriers on campus. Additionally, four mechanisms were uncovered that contributed to the decline in activity related to sexual orientation and therefore assisted the process of cultural reassertion.

Societal Cultural Barriers

Organizational culture, though unique to its specific organization, derives much of its fabric from the larger society. Aspects of societal culture pervaded the campus of St. James. The most prominent were the norms of homophobia and heterosexism, discomfort with sexuality, the stigma associated with homosexuality, and the pressure to keep sexual minorities invisible. The pervasiveness of these oppressive aspects of American culture is well established (Blumenfeld, 1992; Herek, 1989), and their damaging influence on college campuses has also been substantiated (D'Augelli, 1989a, 1989b; Herek, 1986; La Salle & Rhoads, 1992; Nieberding, 1989; Norris, 1992; Rhoads, 1994; Stage & Manning, 1992; Tierney, 1992). However, as previously indicated, little has been documented about the experiences of lesbian, gay, and bisexual people at RAIs and about the way society's culture is mediated through this type of context.

Homophobia. Homophobia specifically relates to the irrational hatred and fear of homosexuality in oneself and in others (Friend, 1992). "It is

a word that calls up images of loss of freedom, verbal and physical violence, death" (Pharr, 1988, p. 1). Grounded in and related to sexism and heterosexism, homophobia also draws much of its power from "the social norms and codes of behavior that, although not expressly written into law or policy, nonetheless work within a society to legitimize oppression" of lesbian, gay, and bisexual people (Blumenfeld, 1992, p. 6). Homophobia is pervasive in American society and includes the silencing of people regarding the topic of sexual minorities, stereotyping, fearing visibility of LGB people, heterosexism (Tinney, 1983), the threat of violence, and violence itself. The root of homophobia—phobia—relates specifically to fear. Beyond fear of homosexuals and homosexuality (i.e., homophobia), participants in this study perceived fear pervading the campus regarding issues of sexual orientation. This included fear on the part of closeted students, faculty, or staff of being found out, and fear on the part of heterosexual students of being labeled as lesbian or gay. Lesbian, gay, and bisexual faculty feared that they would be discounted, isolated, and excluded, and that it would be too personally damaging to be out. Given the violence experienced by gay, lesbian, and bisexual people in the larger society (Herek, 1989) and on college campuses (Rhoads, 1994), fear of a homophobic reaction and possibly violent retribution was a strong deterrent to action.

Straight, lesbian, gay, and bisexual faculty and staff could not imagine an openly gay or lesbian person being hired as a faculty member. While considering the issue of hiring openly lesbian, gay, or bisexual faculty members, Wendy, a heterosexual⁴ sociology professor, stated, "I think that even though [an out faculty person might] be acceptable, that if they were public they could no longer represent the institution, and that would be taken for granted. . . . They are okay as long as they don't represent themselves on the outside as a person from St. James. They would never be called to speak for the college in public statements of any kind." This statement revealed a form of ostracism related to the homophobic nature of the culture; that the process of coming out on the part of a member of the faculty would disconnect the individual from the culture and identity of the institution, without necessarily separating them physically from the institution.

Heterosexism. Heterosexism is the assumption that everyone is or ought to be heterosexual and that heterosexuality is the only legitimate sexual orientation (Lorde, 1985). Participants shared many traditional examples of heterosexism (e.g., assumptions about dating partners, marriage as a goal in life). However, heterosexism influenced lesbian, gay, and bisexual people at this RAI in other specific ways: it reinforced their invisibility and its impact on communicating with other lesbian, gay, and

bisexual people in this environment. This made it that much more difficult for LGB people to find each other and develop supportive communities.

Trying to find other sexual minorities and to make them aware of one's presence in this homophobic climate, where no lesbian, gay, or bisexual community existed, was a complicated process, especially for faculty and administrative staff. From participants' descriptions, it was a dance of physical and verbal nuances, inflections, and subtlety. One used double entendres, "invaded" personal space, referred to particular authors, and was intentional about hanging posters and displaying books. At St. James, unobtrusively displaying a pink triangle was considered by some of the participants as safe, given the lack of awareness of the meaning of that particular symbol on the part of straight faculty and staff. However, in view of the increased danger and potential damage in a culture that rejected homosexuality, most participants talked about being very careful about the signs, signals, and symbols they gave that might betray them to "the wrong people."

One of the ways in which the culture of St. James impacted this process of communication was that LGB people, especially faculty, who were trying to send signals concerning their sexual orientation to potential supporters in their environment found that they had to come *further* out and explain who they were. Amy was a faculty member in religious studies and a bisexual woman who was in a long distance relationship with a woman when she arrived at St. James. She spoke about how this issue affected her: "Here at St. James it seemed really necessary to spell it out. . . . If you know that I lived with this woman and she's coming up to see me all the time. If you know that, why do I have to explain that to you? My impression is that people's surprise has been genuine enough when I told them my sexual orientation that they didn't know. And that made it very different from other places where I have been. And again, I think that's in the absence of the lesbian or gay community."

The need to be explicit was not just with straight people. This aspect of the culture (i.e., heightened heterosexism) was also internalized by other LGB people, in that one gay faculty member did not pick up on any of the signals from Amy, and she finally had to tell him directly about her sexual orientation. The lack of a lesbian, gay, and bisexual community and the invisibility of the issue fed into these heterosexist assumptions.

Discomfort with sexuality. Faculty described students as lacking knowledge of sexuality, fearing sexuality in general, and in classes (e.g., biology, psychology) being unable to say words related to sex organs and acts. This description characterizes the concept of erotophobia, which is defined as having fear, discomfort, or other negative attitudes

about sexuality and erotic topics (Fisher, Byrne, White, & Kelley, 1988). Individuals with authoritarian personalities have been found to score higher on erotophobia (Fisher et al., 1988). Other research (Yarber & Lee, 1983) indicates that erotophobic and high sex-guilt students have more negative attitudes related to homosexuality. Elze (1992) contends that discomfort with sexuality pervades American culture, however, no research has been done to compare the level of erotophobia among college students attending RAIs with those attending secular institutions. While accepting discomfort with sexuality as an element of society's culture, faculty and staff, in comparing their experiences at St. James to experiences at secular institutions, believed it was exacerbated by the Catholic nature of the institution and the fact that a large percentage of the students and faculty were Catholic.

In reference to this study, a first step between not discussing and discussing sexual orientation is recognizing the topic of sexuality in general. This step was perceived to be especially difficult at this Catholic institution. Karen, a heterosexual political science professor, described it this way: "Those were all forces—the general conservatism of the country, the general Catholic discomfort around issues of sex. If you're going to talk about homosexuality, God forbid, you're going to have to acknowledge that everyone is sexual." Given this situation, people who were interested in addressing the issue of sexual orientation had to take on the additional burden of getting people to discuss a broader topic about which there was already tremendous discomfort—sexuality. Opposing this particular societal norm takes great courage (Elze, 1992).

Invisibility. None of the faculty and staff in the study who had been at the institution for more than a few years (and several had been at the institution for more than twelve years) could remember a time when a lesbian, gay, and bisexual student, faculty, or staff member had been out on campus. During the 1991–93 time period the visibility of the issue of sexual orientation was increased due to the activity and organizing occurring on campus and due to the people who came out. However, the actions of people in the institution continued to press toward reducing visibility.

One particularly telling incident was mentioned by several people as symbolizing the pressure toward invisibility. It involved a large, centrally located poster advertising a student senate "Diversity Forum." This was a program where representatives from student groups dealing with issues of diversity, multiculturalism, or marginalization came together to discuss their issues. In separate interviews, both Patty, the advisor to the group and a heterosexual, and Wendy, the sociology professor, spoke of this incident. Patty said, "One corner of the poster had been

ripped off and taken away, and that was the corner that said 'Students Against Homophobia'. . . . It was kind of telling in that we weren't just written on. We were torn off and taken away. It wasn't even like they threw us on the ground. It was literally like they made us nonexistent." Wendy remarked, "Of course, nobody knows who does it. Nobody claims to do it. And they didn't actually do what they do with the women's history stuff, which is to do junk on it, to attack the poster. Here it's trying to keep it invisible. . . . They don't want to have an acknowledged presence of gays and lesbians here." Some might argue that this was an isolated incident and to draw conclusions from this single act is suspect. However, it is the strongly symbolic meaning that people drew from this single act that is most important. For some people, it brought into clear focus the cultural pressure toward invisibility and silence.

Stigma. Homosexuality has long been recognized as a stigmatizing agent in our society (Herd, 1989). There is also evidence of courtesy stigma (Goffman, 1963)—the stigmatizing nature of being acquaintances or friends of stigmatized individuals (in this case homosexuals) (Gochros, 1985; Pfuhl, 1986; Sigelman, Howell, Cornell, Cutright, & Dewey, 1991). The experiences of the participants in this study suggested that at St. James the stigma extended beyond interacting with stigmatized people to anyone who associated with a stigmatized topic—homosexuality. Given that a person was heterosexual until proven otherwise, then anyone concerned about the issue of sexual orientation or homophobia *had* to be lesbian, gay, or bisexual. Anyone who decided to take up the cause (e.g., fight homophobia) first had to deal with the fact that culturally negative assumptions would be made about her or him. In an institutional culture that people recognized as having a narrow band of convention, this may have been too far out of the norm for many people, and several of the participants believed that it constrained the number of people willing to be involved in groups like Students Against Homophobia, which went out of its way to advertise that it was *not* a group for just LGB students. The process of stigmatization was used to discount people's actions or motivations. If a person was identified as lesbian, gay, or bisexual, his or her actions were seen as politically motivated, and this was enough reason to discount them. The campus minister who cofounded People Against Homophobia indicated that he thought the homophobic atmosphere was so threatening that no one could even mention that they had experienced a homosexual thought or incident in their life to anybody without fear of being labeled, branded, and ostracized. Patty, the advisor of Students Against Homophobia, was explicit about this issue at the organizing meeting of the group.

I told people right up front when we started our group, "Just by virtue of you saying you're coming to this meeting, there are going to be people who assume that's why [being lesbian, gay, or bisexual] you're here. I'm telling you that up front, and if that bothers you, think about that or figure out how you want to respond to that yourself."

Institutional Cultural Barriers

Societal cultural barriers were forms of prejudice and oppression that institutional members brought to the campus; however, the religiously affiliated nature of the institution appeared to spawn specific cultural barriers that provided additional potency to the societal barriers and served to strongly enforce dominant cultural norms and behaviors. The primary organizational barrier at the institutional level was, not surprisingly, perceptions related to the Catholic nature of the institution. Other institutional cultural barriers were the pervasive fear of external and typically peripheral constituencies and the uncertainty about when and where it was appropriate to discuss sexual orientation.

Perceptions of Catholicism. The traditions of the Catholic church anchored St. James, and many of the people in the St. James community were perceived by the participants in this study as substantiating their homophobia by drawing on what they perceived to be the history, tradition, and dogma of the Catholic church. Karen, the political science professor, said, "I'm surprised by the extent to which people feel compelled to fall back on the church in their homophobia." Harold, a sociology professor and heterosexual, shared this thought: "Sometimes for students, Catholicism simply will be their argument. They will not talk any further about it. . . . They will say, 'My religion finds it reprehensible, period. It's in the bible.'" Homophobia and perceptions of the Catholic church seemed to be very much intertwined in the culture of the institution. This was perceived especially among the general student body. Many of the participants of this study experienced conversations in which people indicated the belief that the Catholic church specifically condoned homophobia. Several of the participants, especially the LGB students and their allies, struggled with these perceptions as well. However, most of the students in the study reconciled themselves to the fact that the Catholic church was homophobic and not doing enough to address homophobia, but they did not believe that it was sanctioning homophobia. Some of the programming and training being done during this time tried to address these perceptions among the student body. Participants had no idea what, if any, impact the programming and training was having. Given the drop in activity in the fall of 1993 it might be surmised that whatever impact it had, it was not enough to help sustain the "movement."

One contradiction identified by several of the faculty and professional staff was that many of the students at St. James were willing to depart from church views on birth control, premarital sex, and divorce, but not on homosexuality. Instead, they used their views of the church to validate their fear and hatred. Karen addressed this issue: "They call up Catholic doctrine to defend that homosexuality is unnatural, immoral, indecent, obscene. It should be outlawed, it should be punished. And so it's very striking that among a student body that leans, I wouldn't say strongly to the left, but it leans to the left on reproductive issues, on most of those types of issues, doesn't lean that way when it concerns homosexuality." This differentiation among sexuality issues may reflect a way in which the societal barrier of homophobia was played out on this particular campus. That is, perceptions of the Catholic Church doctrine served for some people as a legitimate excuse for their homophobia.

Catholic lesbian, gay, and bisexual students described ways in which their experiences of the Catholic Church, as mediated through parents, parish priests, Catholic school teachers, and St. James faculty, had a negative influence on their development. Some of the results they mentioned included resisting their own sexual orientation (not wanting to admit to themselves that they might be lesbian or gay), having tremendous feelings of guilt, and considering or attempting suicide. They spoke about the church amplifying the negative messages already coming at them from society and acting as a strong deterrent to people who wanted to work on this issue and address the needs of lesbian, gay, and bisexual students.

Fear of external and typically peripheral constituencies. At secular institutions homophobic and heterosexist elements of societal culture pervade the campus. However, the values, beliefs, and assumptions of external (e.g., local clergy, church hierarchy, potential donors) and typically peripheral (e.g., board of trustees, alumni, parents of students, parents of prospective students) constituencies invaded St. James in the form of local influence and fear of the power of these constituencies, making work on this issue that much more difficult. The elements of external (societal) and internal (institutional) culture were tightly coupled at St. James (Weick, 1982). The board of trustees and the alumni of St. James were perceived as the guardians of the Catholic tradition of the institution and as religiously, socially, and politically conservative. Parents were perceived in much the same way, both parents of current students and especially parents of prospective students. St. James, as a tuition-driven institution, feared their power. In reference to dealing with HIV, other sexually transmitted diseases, and the question of having condoms available on campus, Amy, the religious studies professor, commented,

"No matter how good it might be for the students in terms of preventing HIV or STDs, . . . that wasn't the issue. It was just, how will the parents [and] how will our alumni money perceive this?"

This fear constrained the actions of those involved in these change efforts on campus. Andrea, one of the founders of the GLBA and a lesbian, was concerned about trying to involve some of the supportive priests on campus. "You always run into [those questions], what kind of position am I putting this person in? Who am I going to get them in trouble with—the bishop, the archbishop?" This fear also led to the desire on the part of many of the students' supporters among the upper administration that the students and their allies pursue their issues quietly without attracting attention to themselves, the issue, or the institution. The academic dean, viewed as a strong supporter of the students, said, "Let's see if we can't do it quietly, and for God's sake, let's watch what we do with regard to how things play out in the public arena, because this college, in fact, does have ties to the different constituents." It is not so much what external constituencies would do, but the *fear* of what they would do that constrained activity. Their power in the culture had an influence on maintaining normed behavior even without exerting this power.

Appropriate ways to discuss sexual orientation. There were two culturally appropriate ways to discuss sexual orientation that protected an individual on this campus from being stigmatized. One was in an educational/academic context, and the other was in a counseling situation. Wendy, the sociology professor, indicated, "The director of the counseling center is the one person on campus who can say that our lesbian, gay, and bisexual students are suffering, and say 'We must do something' and not be politically marked." It was accepted as inappropriate to make sexual orientation a political issue or to deal with it on a lived level. This cultural restriction contributed to the pressure toward invisibility of the issue.

Given the value of academic freedom, individual faculty could legitimately address the topic of sexual orientation in the context of their classes. There were examples of sociology, psychology, and religious studies professors who had addressed the topic in class for years. The academic dean discussed how he dealt with the topic as a classroom teacher in religious studies.

The question of sexual orientation for faculty would generally pop up with regard to what a person might or might not be able to say in class about these issues. And I tried to be fairly careful about that. I always tried to do it in a way that was within my area of technical competence, because, it's only if you do it within the area of your technical competence that you have any hope of claiming the protections of academic freedom.

There appeared to be no stigmatizing of individuals who dealt with sexual orientation in their classes, and they were among the people identified by students as supporters. Any other mode of addressing the issue meant that it was becoming politicized. Political discussion meant that the underlying beliefs, values, and attitudes of the culture were being called into question. The legitimacy of those beliefs, values, and attitudes would be challenged, perhaps leading to a focus on the power structures within the culture. Addressing the topic in the context of class intellectualized it and removed it from the context of the institution and its culture. Dealing with it in the context of counseling meant that it was being dealt with quietly and individually and that the symptoms (e.g., depression, anger, frustration) were being addressed, but not all of the causes (e.g., oppression, being closeted, homophobic climate).

The perceptions of Catholicism's stand on homosexuality, the fear of external and typically peripheral constituencies, and the lack of appropriate ways to discuss sexuality because of the societal-based cultural barriers on campus created a formidable barrier to addressing issues of sexual orientation. Although for about a two-year time period sexual orientation was addressed on campus, eventually the power of the culture reasserted itself.

Cultural Dynamics Leading to Decline in Activity

Cultural artifacts, in this case cultural barriers, are easier to discover and substantiate than cultural processes, because the former tend to be more visible and closer to the conscious level (Schein, 1992). However, the issue of cultural dynamics—attributing cultural causes to specific actions—must be presented in a much more tentative manner, because most actions on the part of individuals in an organization have various motivations and multiple causes. For example, although an individual may indicate that the reason for leaving an institution is a better offer somewhere else, most often there are other causes (e.g., unhappiness in the current position, lack of professional satisfaction, lack of fit with the organization or one's co-workers, a chilly climate, a spouse's or partner's desire to move) and motivations (e.g., prestige needs, desire for a higher salary, desire to move to another part of the country, family concerns) that contribute to that decision. The purpose of the following section is to suggest tentative answers to why and how the culture of the institution defeated the opposition of the individuals who were actively addressing the issue of sexual orientation on St. James campus.

Cultural barriers. The cultural barriers were part of the cultural dynamics that contributed to the fall off in activity. The work on the part of study participants did not address most of the barriers identified above

and failed to eliminate any of them. Lesbian, gay, and bisexual students and faculty and their allies faced a web of interrelated barriers in their attempts to address issues of sexual orientation at St. James College. Homophobia, heterosexism, the discomfort with issues related to sexuality, the invisibility of sexual minorities, and the stigma associated with homosexuality were all elements of the culture of the greater societal context in which St. James existed. These elements interacted to reinforce one another; they were intensified by the religiously affiliated elements of the culture (i.e., perceptions of Catholicism, fear of typically peripheral and external constituencies, lack of appropriate ways to discuss sexual issues); and they marginalized the work that was being done to address sexual orientation. These barriers also contributed to and were strengthened by the lack of an identifiable LGB community that by its presence might have presented a counterweight to these cultural elements and provided a cultural enclave (Rhoads, 1994) in which to "escape" the dominant institutional culture. Not having an alternative presence or voice made the culture appear to be that much more monolithically homophobic and heterosexist and made lesbian, gay, and bisexual people feel that much more isolated and alone.

According to participants' reports, the sum of their actions during 1991–93 seemed to have had an immediate influence on improving the campus climate, especially in reducing overt homophobia. However, the people who were the focus of this study were members of the culture of this RAI. Rhoads (1994), in his study of the Queer Nation movement at a large research university, studied a group of individuals many of whom consciously adopted a "contraculture" stance to the dominant culture. By placing themselves in opposition to the prevailing culture, they created a cultural space from which to "wage" their struggle to change the dominant culture. Virtually none of the participants in the St. James study saw her- or himself as separate from the dominant culture, nor—outside of sexual orientation issues—did these individuals want to be culturally distinct. In their resistance to dominant ways of thinking, believing, and acting in relation to sexual orientation these individuals did not suddenly become separate from the prevailing culture; they were attempting to influence and change the culture while trying to remain members of it. Therefore, they continued to be influenced and, more specifically, constrained in their actions by the dominant culture, and eventually this culture crumbled the oppositional response of the students and their allies.

The difficult dynamic of attempting to change the culture from within was compounded by the conditional support received by others. As described above, the academic dean was identified by the students as a

supporter of their efforts, yet he wanted the students to "work quietly." Other faculty were viewed as supporters because they addressed issues of sexual orientation in their sociology, psychology, or religious studies classes (i.e., culturally appropriate ways of addressing sexual orientation). However, except for Quentin, none of the other faculty members who addressed these issues in class took any action to challenge the underlying culture.

Faculty could continue to deal with the topic of sexual orientation intellectually in the classroom, hall directors and student activities professionals could facilitate awareness raising and sensitivity programs, and counselors could deal with students struggling with these issues on an individual basis. These activities perhaps resisted, but ultimately did not challenge the underlying culture. As Tierney (1993) pointed out, changing the culture of an institution is not just a matter of changing people's attitudes and encouraging the empowerment of individuals, but a matter of addressing and changing the structures and power relationships that underlie the culture. Cultural structures and power relationships were not addressed by the participants in this study.

Early successes reduced urgency. From participants' stories, early activity (1991–92) related to sexual orientation seemed to tap a well of pent-up energy among those who became involved. The impetus to organizing was a chance meeting and discussion between the two cofounders of People Against Homophobia (Irene, director of the counseling center and a heterosexual, and Bert, a campus minister) early in the fall 1991 semester. Faculty and staff who, individually, had been frustrated about the situation on campus were invited to come together to discuss the situation. This group of about a dozen people eventually formed People Against Homophobia. During their first year the group met regularly, discussed a name for the group (a culturally appropriate name, in that it is not "for" anything related to LGB issues, it is against hatred and fear), supported programming and training efforts on the part of the residence life staff, helped add sexual orientation to the campus nondiscrimination statement, produced "People Against Homophobia" buttons that members wore and distributed on campus, and secured funding for and invited a national speaker to campus to discuss self-esteem issues of lesbian and gay students. The activity and visibility of PAH encouraged some LGB students to come forward, meet each other, and ask for help. This resulted in the founding of both Students Against Homophobia and the Continuum Group (the counseling center based support group for LGB students) during the 1992–93 school year. PAH continued to meet during 1992–93 but did not experience near the level of activity of the first year. Quentin, the psychology professor, came out in the context of

a class in the spring of 1993, and some of the students from the Continuum Group volunteered to serve on class panels to discuss issues of sexual orientation during that spring semester. As mentioned above, this activity appeared to have an influence on improving the campus climate related to sexual orientation, especially in reducing overt homophobia. It also appeared to convince some individuals, particularly the students, that the *culture* on campus was changing to one that was more accepting of issues related to sexual orientation and sexual minorities and that efforts could be safely curtailed. These early successes, rather than changing the culture, appeared to eliminate the urgency of continued cultural opposition.

Lack of reward for work and shifts in priorities. Faculty especially noted the lack of recognition and reward for working on issues related to sexual orientation. No one mentioned being specifically punished for their participation in such organizations as PAH (though at least one administrative staff member was "cautioned"), but neither was their time and energy rewarded. By the fall of 1993 priorities had shifted for several individuals. Irene, the director of the counseling center, had one counselor out on maternity leave and felt that she had to spend more time on issues related to relationship violence and date rape. Other faculty returned other projects to a level of priority higher than their work with PAH.

Leaders left and were not replaced. Related to shifting priorities was the fact that there was a high rate of turnover in a number of leadership positions between the spring of 1993 and the fall. As indicated above, Irene relinquished her position as one of the conveners of PAH. Bert, the other cofounder of PAH, took a leave that fall. Wendy, the sociology professor, was identified as the person to take over as chair of PAH, but neither she nor anyone else convened the group during the fall semester. Wendy had also agreed to be the moderator of the GLBA but was never contacted. Two of the students who had worked to establish the GLBA (Andrea and Dave) had graduated. The other students involved did not carry on the work, neither did they seek to recruit or involve more students. Two influential and supportive student leaders (Ted, the president of the student senate, and Larry, the chair of the campus programming board) both graduated. Quentin left both St. James and college teaching. He had known he was leaving when he decided to come out on campus, so his risk in coming out was lessened. No other faculty or staff followed his lead in coming out, so when he left, there were once again no "out" professionals on campus. For various reasons SAH had a difficult time getting started that fall. Patty, the founder and advisor, could not identify the reasons why this had been the case, but the group had their first

meeting in November and had what she considered a good turnout of 20 students (about 15 were new to the group and about 5 were returning).

Perhaps it was just a coincidence that activity diminished and that all these people left at this particular time. However, as indicated above, organizational actions typically have multiple motivations and causes. Viewing the process through a cultural lens allows us to identify additional possible causes and motivations for the actions that occurred at St. James during this time period. Just as Quentin knew he was leaving, the seniors knew they were graduating. Each was firmly entrenched in the culture when they "took up the cause." Perhaps they could afford to take additional risks in challenging the culture of the institution by coming out and attempting to establish a gay, lesbian, and bisexual alliance. Several of them mentioned wanting to leave the institution better than they had found it. Cultural resistance is hard work. Two years as convener of PAH was enough for Irene; other priorities called her as well as other faculty and staff.

With the sense of urgency diminished and in view of shifting priorities and lack of reward for working in this area, when leadership voids emerged, no one moved to fill them. Without individuals to provide energy and leadership, activity dropped off and cultural resistance all but ceased.

Implications

What was needed at St. James to overcome the cultural barriers and address the cultural dynamics in order to change the institution's culture? The findings of this research imply several conclusions from which other institutions can gain insight about culture and culture change related to sexual orientation at religiously affiliated institutions. Obviously, no one can predict what might have happened if gay, lesbian, and bisexual students and staff and their supporters had acted differently at St. James. Given the tightly coupled nature of the campus to its external constituents and societal culture, significant cultural change might have been impossible without change in the greater culture in which St. James existed and that further public resistance would have been met by more direct action on the part of the members of the dominant culture, especially campus leaders or external constituents. However, it can be argued that for any changes in the culture of St. James to occur the following actions were necessary:

1. *At least some of the members of the institution seeking to change the culture of St. James in regard to sexual orientation had to move outside of the dominant culture.* It appears from the experiences of the par-

ticipants in this study that there is a difference between feeling marginalized by and within a culture and working to change culture from the margins (from outside or at the border of the culture). Tierney (1993) contended that cultural resistance and change must address the underlying power and influence structures of the culture. However, especially when compared to Rhoads's (1994) study of the Queer Nation movement on one campus, the experiences of the individuals in this study imply that, in order for them to have persisted in their work to change the culture, they could not have remained totally "of" that culture. Culture is very difficult to change from the center, and it is most often changed from the margins or borders (Giroux, 1992). The margin can be a lonely place, because when one moves to the margin, one is seen as an outsider to the dominant culture. Some of the participants recognized this when discussing what they believed would happen if a faculty member came out on campus (i.e., that he or she could no longer represent St. James to any external audiences).

2. A "*contra*" subculture was needed to persist in the change efforts. Because working at the margins can be lonely work, a mutually supportive group beyond the subgroups identified was needed. In his study of a cultural enclave of queer students at a research university, Rhoads (1994) found that their resistance to dominant cultural norms was enhanced and maintained by the development of a "contracultural" community or enclave at the border of the dominant culture of the institution. Lesbian, gay, and bisexual people and their allies at St. James needed to go to the margins and develop a sustained community and subculture through which to address culture change, but because they did not do this, the dominant culture was able to suppress the resistance.

Although not identified as a cultural barrier, the lack of an LGB community on or associated with campus served to intensify the cultural barriers that were identified. Membership in an LGB community goes beyond membership in formal groups (e.g., PAH, SAH, and the Continuum Group), and the existence of formal groups does not ensure the existence of a community. To use a professional sports analogy, the community is the clubhouse; it is a place where one can relax, be one's self, and where one can control who enters. The formal groups are the actual games. They are public and played by a set of agreed upon rules. The formal groups are one of the places where cultural resistance is waged. A community, by contrast, whether underground or "out," offers multiple social and interpersonal spaces within which to interact and explore one's identity as a lesbian, gay, or bisexual person. It can offer a cultural space distinct from the oppressive dominant culture.

3. *The culture had to be brought to conscious awareness.* It appeared

that the participants of the study needed to better identify and understand the complex, mutually shaping, pervasive, and reinforcing nature of the culture as it related to issues of sexual orientation at St. James. Additionally, as Tierney (1993) recommended, the cultural structures and power relationships also had to be brought to conscious awareness by those seeking to change the culture. Only when cultural influences were understood, could the individuals and groups more effectively work intentionally to dismantle and remove those barriers (Freire, 1970; Shor, 1992). Coming to know and understand the culture and how they, as lesbian, gay, or bisexual people, were influenced by it required looking for and analyzing contradictions in the environment (e.g., recognizing that students accepted Catholic teachings on homosexuality but rejected those related to birth control and premarital sex), and it required openness and critical reflection on their actions and on the responses to their actions.

4. *The visibility of the issue of sexual orientation had to be maintained and increased.* Beyond being aware of the culture, it was important to maintain the visibility of the issue on campus. There were isolated individuals, especially LGB students, who were in pain and had no idea where or to whom to reach out for help. During the 1991–93 time period the activity surrounding the issue made it quite visible on campus. A cadre of faculty and student affairs staff came together and through People Against Homophobia breached the invisibility of the issue in multiple ways (by existing, distributing “People Against Homophobia” buttons, programming, and discussing the topic in classes). The counseling center advertised the Continuum Group, a counseling center based (and, therefore, culturally appropriate) support group for lesbian, gay, and bisexual students. A relatively small group of people who either did not fear the stigma or were protected from it (e.g., counselors, faculty in educational settings, members of religious orders) needed to continue to increase the visibility, break the silence, and possibly reach students who needed help.

Conclusion

Changing oppressive cultures has been a focus in the literature and a concern for those wishing to rid our society of such negative attitudes as racism, sexism, homophobia, and heterosexism. Tierney (1993) has suggested a focus on creating communities of difference where those attributes that make us unique and distinct as individuals and groups are celebrated and are a source of mutual learning. However, the results of this study highlight the difficulty of trying to change oppressive cultures

from within the culture, specifically in relation to sexual orientation. The findings also emphasize the influence of varying levels of culture and suggest that future research focus on how these various layers of culture serve to reinforce and/or intensify one another, and how it might be possible to "disconnect" institutional culture from societal culture in order to make successful cultural change efforts more likely.

Notes

¹All names for students, staff, and faculty are pseudonyms.

²The name of the institution is a pseudonym.

³A lesbian, gay, bisexual community would require a group of people who saw themselves as a social group, sharing interests and perceiving themselves as distinct in some respect from the larger community. This kind of community did not exist at St. James. LGB faculty and staff tended to identify with LGB communities beyond the campus and remained closeted on campus. LGB students tended to be closeted and isolated, apparently rarely finding other LGB students. The activities of 1991–93 did bring together a number of LGB students into formal groups, but as the formal groups faded, so did any semblance of a nascent LGB community.

⁴Though at times awkward, for sake of clarity and to reduce the influence of assumptions, the sexual orientation of each participant is identified where it is known.

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Pushed to the Margins

Sources of Stress for African American College and University Faculty

Introduction

Learning early on that good grades were rewarded while independent thinking was regarded with suspicion, I knew that it was important to be "smart" but not "too smart." . . . to ask too many questions, to talk about ideas that differed from the prevailing community world view, to say things grown Black folks relegated to the realm of the unspeakable was to invite punishment and even abuse. (bell hooks, 1996, p. 361)

The role of faculty as scholar is one of asking questions, investigating issues, and discussing and challenging world views. That role is intensified for African American faculty, because the prevailing community world views of the academy itself are frequently challenged by African Americans' presence in it. Cornel West (1993) contends that what is required for African American faculty to secure their career in academia is that they imitate dominant paradigms using African American subject matter. Depending on their degree of incongruence with the dominant paradigm, African American faculty experiences are frequently demoralizing as well as stifling to their intellectual creativity.

West (1993) further asserts that to become a Black intellectual is a choice that results in self-imposed marginality, disconnecting the individual from the larger African American community while not providing full membership in the larger academic community. Heightening this marginality for many scholars is the workplace, where the cultures of

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predominantly white colleges and universities are both white-normed and white-dominated, challenging the experiences of faculty from underrepresented groups to be qualitatively different and disconnected from those of the dominant culture (Harvey, 1996). Marginality is often experienced by African American faculty in their disciplines based on their scholarly agenda; in their departments based on their teaching agenda; in the larger college community based on an institution-preferred agenda; and in the African American community based on an agenda that is misunderstood and frequently benefits few. Moreover, seldom are African American faculty able to avoid what Finkelstein (1984) refers to as the stress of being a token. Former Harvard law professor, Derrick Bell (1994) refers to the role of successful African Americans as a "tightrope act," where the role of race in both successes or failures cannot be denied. Bell elaborates that with success often comes the dilemma of maintaining ethical bearings, sometimes seen as "employment and self-hatred [on one side], on the other, the equally dubious honor of unemployment with integrity" (Bell, 1994, p. 159).¹ Thus, balancing the demands of academic life and the multi-marginality of being underrepresented by race, scholarly agenda, and the larger academic and social communities becomes a common experience of African American faculty. The stress related to performing and succeeding in academe, given this multi-marginality, is not always anticipated or understood by the individual, especially in view of the purported desired diversity of colleges and universities today. Marginality is often neither observable nor acknowledged by others within the academy. This article examines issues of stress among African American faculty at predominantly white colleges and universities and further explores the role of stress among male and female faculty.

There is a good deal of research on occupational stress. Much of it uses a definition similar in orientation to one proposed by McGrath, which describes the conditions under which stress is likely to occur, conditions where an individual perceives that her or his capabilities and resources for adequately responding to a demand are threatened and where there is uncertainty about the outcomes from meeting these demands (McGrath, 1976). The competing workload agendas of most college and university faculty often intensify these stress-producing conditions.

Researchers have given attention to stress among college and university faculty, but with limited attention to the dimensions of stress. Dey's (1994) research expands on previous faculty stress research (Finkelstein, 1984; Gmelch, Lovrich, & Wilke, 1984) by including "off-campus" sources of stress (e.g., family obligations) which can be substantial for

faculty but have previously not been given much attention. Even less attention has been devoted to understanding stress among faculty from underrepresented populations—African Americans, Asian Americans, Latinos, and Native Americans. In earlier work on faculty stress, differences have been noted between women and men faculty (Dey, 1994; Smith, 1995), underrepresented and white male faculty (Dey, 1994), and more specifically, white and African American faculty (Smith & Witt, 1996). The results of this research suggest a need for further investigation and greater understanding of stress among populations that since their recent inclusion in the academy have been marginal. Because of the marginality experienced by all underrepresented groups (Harvey, 1996), including women, research needs to focus on each individual population as a way of understanding the relationship of their work condition to their marginality. The present study builds and expands on previous research by focusing on one underrepresented population—African American faculty. It is not a comparative study, because evidence of similarities will not increase our understanding of the marginality of the population. There are presently no models to guide the examination of stress, or other conditions, in relation to marginality; however, the intent here is to begin to understand the experiences and conditions of African American faculty in predominantly white institutions as a way of understanding how to promote their retention within the profession as well as the attractiveness of faculty careers to African Americans.

African Americans, Asian Americans, Latinos, and Native Americans constitute between 20 and 25% of the U.S. population, yet fewer than 10% of the academic positions are held by members of these groups. A survey of the professoriate by Astin, Korn, and Dey (1991) suggests a decline in the number of faculty from these populations during the decade of the 1980s. Whereas surveys of faculty conducted between 1973 and 1980 evidenced an increase from 6.2% to 9.1% (Bowen & Schuster, 1986), in 1990, only 8.9% of faculty in universities and four-year and two-year colleges were from underrepresented groups. Thus, recent recruitment efforts have not been able to substantially address the retention or degree of underrepresentation these populations experience in their roles as faculty in U.S. colleges and universities.

Among the critical points in the educational structure, recruitment and hiring and promotion and tenure have been identified as targets for increasing the availability of underrepresented faculty, including women (Blackwell, 1988). Studying occupational stress among African American faculty in predominantly white institutions is a way to begin to understand the work conditions that affect their decisions to stay in or leave academe. Until we are able to understand better the specific expe-

periences of African American and other underrepresented faculty and develop corresponding programs and policies to increase the attractiveness of these careers, it seems likely that colleges and universities will continue to have limited success achieving and sustaining diversity among their faculties.

This research seeks to help fill this void. Specifically, it attempts to address directly several limitations in the existing faculty stress research by first providing a clearer picture of the experiences of one underrepresented population—African American faculty. Secondly, institutional differences will be considered so that sources of stress for African American faculty will be examined at universities, four-year, and two-year colleges. Each of these institutional contexts provides a different faculty experience, and we will delineate these differences. Finally, this study will consider the possibility of gender differences in the faculty experience. Previous research has shown gender to have strong implications for faculty stress (Dey, 1994; Smith, 1995), and we hope to provide a better understanding of the multi-marginality of African American women in the academy.

Data Set

Data used in this study are from a national survey of college faculty and administrators conducted by the Higher Education Research Institute (HERI) at UCLA in the fall and winter of 1992 (Dey, Ramirez, Korn, & Astin, 1993). The questionnaire is based largely on the instrument used in the 1989 faculty survey (see Astin, Korn, & Dey, 1991), which was designed in conjunction with a national study of the outcomes of general education programs funded by the Exxon Education Foundation. The revised 1992 instrument is based on results of the 1989 survey, suggestions from faculty respondents, as well as suggestions from the HERI advisory board and researchers who are actively involved in studying faculty issues. In addition to demographic and biographic information, the revised questionnaire content focuses heavily on issues such as how faculty members spend their time, how they interact with students, which methods of teaching and examining students they prefer, how they perceive the institutional climate, and what their primary sources of stress and satisfaction are. The instrument also allows participating institutions to focus on faculty issues specific to their institution.

Institutional sampling. Letters of invitation to participate in the survey were sent to the chief academic and institutional research officers at nearly 2,600 institutions nationwide. Of the total population of invited institutions, 344 institutions agreed to administer the survey. Of these

344 institutions, 55 were dropped from the national data base because of low response rates, leaving 289 institutions. A careful examination of the characteristics of the participating institutions reveals that every major type of institution is well represented (Dey, Ramirez, Korn, & Astin, 1993).

Survey response. The rate of response to the survey was high, exceeding the response rate in the 1989 survey. Of the 72,417 questionnaires mailed out, 43,940 usable returns were eventually received, constituting a 61% response, which compares favorably to the 55% response rate achieved in the 1989 faculty survey (see Astin, Korn, & Dey, 1991). Factors contributing to the higher response rate were (1) the questionnaire format—it contained nearly 200 questions, yet was limited to four pages and required a minimal reading coupled with a maximum amount of responding; (2) its appeal to faculty—questions addressed a wide range of issues of concern to faculty and their institution, and respondents were told that their institution would receive a profile of faculty responses to each item; and (3) follow-up—a second wave of questionnaires was sent to nonrespondents approximately four weeks after the first wave had been sent.

Sample

The sample available for these analyses are all African American respondents, for whom the sample selection was based on two additional criteria: They must have indicated on the survey that their primary responsibility was teaching (rather than administration), and they had to be presently employed in predominantly white institutions. We were left with responses from 796 faculty. Although this number is small in comparison to the overall sample, it should prove adequate for the goals of this study.

Limitations of the Study

Several limitations are evident in this study. First, the questionnaire was not specifically designed to study occupational stress or marginality. As such, some conditions that have been linked to stress, such as psychological hardiness (Rush, 1995), career burnout (Dillon & Tanner, 1995), and work politics (Dua, 1994); as well as to marginality and stress, such as social class—based on class while growing up (Zweigenhaft & Dumhoff, 1991)—are not among the constructs available to include in our study. Second, although the data are generally representative of the national population of faculty, the African American sample available for and once refined for this study is quite small. In addition, because the specific response rate for African Americans is not known,

we may not be dealing with a representative sample of African American faculty. Consequently, caution must be taken when generalizing the findings. However, we think that the strength of understanding stress among this population far outweighs the weaknesses when we consider how little attention African American faculty issues have been given in the literature.

Method

Analysis

Faculty stress was assessed using the responses to 18 items developed by the researchers at HERI that were designed to capture a variety of potential sources of stress, plus a single item designed to capture a faculty member's level of stress overall. Although empirical data are not available to test the degree to which these self-reported sources of stress relate to those captured by other instruments, many items are similar in content, and all are similar in design to those used in previous survey-based studies of faculty stress (such as the Faculty Stress Index used in Gmelch, Lovrich, & Wilke, 1984). Self-report measures of stress can be criticized on the grounds that they may be subject to distortions related to social desirability, denial, or rationalization. In response to this critique, Derogatis (1982) conducted a thorough review of the subject and concluded that the strengths of self-report stress assessments typically outweigh their weaknesses. Moreover, relatively objective measures of stress based on medical measurements or clinical evaluations are well beyond the scope of these analyses and would appear impossible to implement in the large-scale, multi-institutional sample used as the basis of this study.

In order to understand more clearly specific areas of stress represented in the 18 stress items, we performed a series of factor analyses. Our first objective was to determine whether there were different dimensions of stress for male and female faculty (and to a lesser extent for faculty in different types of institutions). A series of preliminary, confirmatory factor analyses based on previous work in this area (Dey, 1994) evidenced only minor differences across these groups, and the need to conduct separate confirmatory analyses was unnecessary. The results suggest that, as a group, African American male and female faculty are more alike than different in terms of the dimensions of stress they experience.

Similar procedures were employed and results obtained as in Dey's (1994) earlier work. A series of factor analyses were performed on the 18 stress items that were included on the questionnaire. These items

asked faculty to rate the extent to which the areas had been a source of stress within the past two years. The items were rated on a 3-point scale: not at all, somewhat, or extensive. After computing a number of different factor solutions, we determined that several items had extremely low factor communalities ($h^2 < 0.10$) and should be dropped. A second series of Exploratory Factor Analyses (using the maximum likelihood method for extraction with oblique rotations, because we assumed the underlying stress constructs to be correlated) were conducted using the 14 remaining variables. As in Dey's previous work, it was apparent that the solution that yielded the most interpretable results had four factors. The items loading upon each of these factors could be logically supported and were consistent in their direction of loading. Because of the similarity of the stress factors previously identified among college faculty in general, we labeled these factors time constraints, home responsibilities, governance activities, and promotion concerns.

Variables identified and used in the four stress factors are as follow: (1) *time constraints* includes lack of personal time, time pressures, and teaching load; (2) *home responsibilities* includes household responsibilities, child care, children's problems, and marital friction; (3) *governance activities* includes faculty meetings, committee work, and consulting with colleagues; and (4) *promotion concerns* includes the review and promotion process, research and publishing demands, and subtle discrimination (which includes sensing prejudice, racism, and sexism).

Finally, we regressed each of the 5 dependent variables upon a set of 41 independent variables that were chosen to represent activities and experiences within the institution as well as institutional type—universities, four-year colleges, and private institutions (a dichotomous variable indicating employment at a two-year college was omitted from the regression analyses as the referent category).

Results

To understand the differences in African American male and female faculty in different institutional types, bivariate relationships between the stress constructs and the faculty groups were explored. We examined the data looking at female and male faculty in three types of institutions—universities, four-year colleges, and two-year colleges—resulting in six groups. The data in Table 1 present results of extensive sources of stress for faculty experienced within the past two years. The most common sources of stress are experienced in the areas of time constraints, promotion concerns, and overall stress; less stress is reported by all faculty in the areas of governance activities and home responsibilities.

TABLE 1
Differences Across Stress Measures by Institutional Type and Gender

Stress Measure	African American Faculty	Institutional Type					
		University		Four-Year College		Two-Year College	
		Men	Women	Men	Women	Men	Women
Time constraints	5.13	5.01	6.21	4.49	5.88	4.43	4.72
Home responsibilities	2.57	2.26	2.56	2.62	2.82	2.37	2.43
Governance activities	3.09	2.79	2.98	2.97	3.28	3.49	3.34
Promotion concerns	4.47	4.52	5.03	4.29	4.89	3.95	3.52
Overall stress level	2.31	2.28	2.52	2.23	2.48	1.93	2.19
N	796	126	87	251	200	63	69

NOTE: Time constraints, home responsibilities, governance activities, and promotion concerns are factorially derived scales that were first standardized and then rescaled to range from 0 to 10. Reliabilities for these four constructs are time constraints = 0.71, home responsibilities = 0.68, governance activities = 0.64, and promotion concerns = 0.54. Overall stress level in past two years is measured using a 3-point self-report scale, where 1 = little or none and 3 = extreme.

Women faculty in universities as well as four-year colleges experience greater levels of stress than men in all areas, but significantly more in the two most common areas, time constraints and promotion concerns. Moreover, regardless of the type of institution, women experience significantly more overall stress than their male counterparts. This gender difference is consistent with previous research reported by Smith (1995).

A one-way analysis of variance comparing the 6 groups of African American faculty showed significant differences across the groups for overall stress level, time constraints, and promotion concerns. A post-hoc Scheffe test was computed for these three variables to determine which of the subgroups were significantly different from the others ($p < 0.05$). For the overall stress item, men at two-year colleges were significantly different than both men and women faculty at universities and women at four-year colleges. In addition, men at four-year colleges differed significantly from women at four-year colleges and women at universities. For the time constraints factor, men at two-year and four-year colleges differed significantly from women at both four-year colleges and universities. Women at universities and two-year colleges differed significantly in their responses to this item. In terms of promotion concerns, women at two-year colleges were the least likely to report stress in this area, their stress level was significantly lower than that of their women counterparts at four-year colleges and universities.

We further explored institutional differences by looking at the combined male and female faculty samples in each of the three types of in-

stitutions. The results, presented in Table 2, show that for the three most common sources of stress—time constraints, promotion concerns, and overall stress—university faculty experience the greatest amount, whereas those in two-year colleges experience the least. A one-way analysis of variance revealed significant institutional differences in these three critical areas; overall stress ($F = 10.79$, $df\ 2/766$, $p < 0.01$), promotion concerns ($F = 10.66$, $df\ 2/793$, $p < 0.01$), and time constraints ($F = 4.62$, $df\ 2/793$, $p < 0.05$). If, as Blackwell (1988) points out, the promotion and tenure process should be a target area for increasing underrepresented faculty (including women), then greater attention needs to be given to mentoring African Americans for faculty roles in four-year college and university settings. This is especially critical for African American women, given the observed inadequacy of graduate level mentoring for them (Turner & Thompson, 1993), and given that the institutional differences in these analyses appear to be driven by the more apparent gender differences.

Researchers have argued that some stress is positive and is related to areas of job satisfaction (Olsen, Maple, & Stage, 1995). An examination was made to determine whether any relationship exists between the 5 stress constructs and each of the 14 satisfaction variables. We also tested an additional indicator of job satisfaction, which asks faculty if they would still choose to be professors if they could do it all over again. The results, presented in Table 3, indicate that in most cases there is a significant negative relationship (as indicated by one or more asterisks), sug-

TABLE 2
Analysis of Variance: Stress by Institutional Type

Stress Measure	Institutional Type								<i>F</i>	sig.
	All		University		Four-Year College		Two-Year College			
	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>		
Time constraints	5.12	(2.74)	5.50	(2.66)	5.10	(2.79)	4.58	(2.61)	4.62*	0.0101
Home responsibilities	2.57	(2.23)	2.38	(2.13)	2.70	(2.28)	2.40	(2.17)	1.96	0.1412
Governance activities	3.09	(2.20)	2.86	(2.15)	3.10	(2.18)	3.41	(2.31)	2.57	0.0768
Promotion concerns	4.46	(2.09)	4.72	(2.10)	4.55	(2.08)	3.72	(1.95)	10.66**	0.0000
Overall stress level	2.30	(0.65)	2.37	(0.63)	2.34	(0.64)	2.06	(0.66)	10.79**	0.0000
<i>N</i>	796		213		451		132			

NOTES: Time constraints, home responsibilities, governance activities, and promotion concerns are factorially derived scales that were first standardized and then rescaled to range from 0 to 10. Reliabilities for these four constructs are time constraints = 0.71, home responsibilities = 0.68, governance activities = 0.64, and promotion concerns = 0.54. Overall stress level in past two years is measured using a three-point self-report scale, where 1 = little or none and 3 = extreme.

* $p < 0.05$. ** $p < 0.01$.

TABLE 3
Zero-Order Correlations of Stress and Satisfaction Items

Predictor Variables	Overall Stress	Time Constraints	Home Responsibilities	Governance Activities	Promotion Concerns
Would you still be a professor if you could do it all over again?	-0.15**	-0.09**	-0.02	-0.03	-0.17**
Level of satisfaction with					
Salary and fringe benefits	-0.06*	-0.06*	-0.09**	-0.02	-0.12**
Opportunities for scholarly pursuits	-0.13**	-0.20**	0.00	-0.12**	-0.20**
Teaching load	-0.12**	-0.24**	-0.01	-0.12**	-0.15**
Quality of students	0.00	-0.06*	0.01	-0.08**	-0.07*
Working conditions	-0.13**	-0.20**	0.01	-0.12**	-0.16**
Autonomy and independence	-0.11**	-0.09**	0.05	-0.14**	-0.22**
Professional relationships with other faculty members	-0.17**	-0.12**	0.02	-0.14**	-0.36**
Social relationships with other faculty members	-0.21**	-0.15**	-0.02	-0.13**	-0.31**
Competency of colleagues	-0.08**	-0.01	0.07*	-0.17**	-0.25**
Visibility for jobs at other institutions	-0.10**	-0.09**	-0.04	-0.04	-0.17**
Job security	-0.18**	-0.13**	-0.09**	-0.02	-0.30**
Undergraduate course assignments	-0.14**	-0.16**	-0.11**	-0.06*	-0.19**
Relationships with campus administrators	-0.19**	-0.11**	0.00	-0.11**	-0.36**
Overall job satisfaction	-0.26**	-0.21**	-0.06*	-0.12**	-0.38**

* $p < 0.05$. ** $p < 0.01$.

gesting that the more of the particular type of stress experienced, the less satisfied faculty are. Although not all the stress measures are universally related in a negative direction to the satisfaction items (see for example the results related to home responsibilities), this is the predominant trend. There were no significant positive relationships found. This suggests that although there may be some motivational outcomes of stress (e.g., feeling challenged by one's work), among the African American faculty studied here stress consistently is associated with lower levels of satisfaction.

Further support for our interpretation of stress as negative is evidenced in the relationships between areas of satisfaction and promotion concerns. The more stress African American faculty experience related to promotion, the less likely they are to be satisfied in their relationships with other campus professionals: professional relationships with faculty ($r = -0.36$), social relationships with faculty ($r = -0.31$), and relationships with campus administrators ($r = -0.36$). Moreover, the strongest negative relationship is evident between promotion concerns and overall job satisfaction ($r = -0.38$). The significant negative relationships in

these areas should come as no surprise, given that promotion concerns is a construct that includes discrimination based on prejudice, racism, and sexism, along with research and publishing demands and the promotion process. If the scholarship areas of African American faculty are marginalized by other professionals who, in turn, determine the worth of that scholarship and their worth as colleagues, then less satisfying relationships would contribute to substantial stress in this area. Therefore, for all stress constructs we conclude that our interpretation is accurate. For this sample of African American faculty all stress items are associated with negative rather than positive states of being.

Because of the significant gender differences in stress apparent in our examination of institutional differences, we also wanted to examine whatever differences might be apparent among the predictor variables. Table 4 presents the results and reveals that approximately half of the predictor variables are significantly related to gender. The variables can be classified into three basic categories—professional status, home supports, and work experiences. The first four significant variables in the table—academic rank,² having a doctorate, base salary, and having tenure—indicate that the professional status of men is higher than that of women. Men are more likely to be full professors than assistant professors or lecturers, have doctoral degrees, have higher salaries, and be tenured. The lower professional status of African American women faculty may suggest their greater vulnerability to certain areas of stress, such as promotion concerns and overall stress, as well as their vulnerability to the effects of marginality.

The second set of variables significantly related to gender indicate that men are more likely to have supportive home networks than do women. Men are more likely to be married or living with a partner, to have a family, and to spend less time on household chores. Family supports allow faculty greater opportunities to become part of the larger community social network, possibly through interactions with the families of their children's friends or with friends of a spouse or partner. This is especially meaningful when considering that many faculty must relocate to acquire their jobs. Those with families (who are more likely to be men) are therefore less likely to experience community isolation. The fact that men spend less time on household chores than women suggests that men can have more supports outside of the workplace; the fact that women spend more time on household chores may explain why women experience greater stress related to time constraints at work.

Among the work experience variables that are significantly related to gender, Table 4 reveals that men spend more time on scholarly endeavors, the kind that are likely to be rewarded in the promotion process.

TABLE 4
Gender Differences Across the Predictor Variables

	Correlation with Faculty Gender	Mean Value for		Variable Range	
		Men	Women	Min.	Max.
Academic rank	0.16**	2.46	2.78	1	4
Has doctorate	-0.13**	1.62	1.49	1	2
Base institutional salary	-0.21**	4.05	3.48	1	7
Tenured	-0.12**	1.43	1.31	1	2
Years at present institution	-0.05	10.86	9.04	0	47
No. of children 0–4 years of age	-0.20**	1.39	1.16	1	4
No. of children 5–12 years of age	-0.20**	1.74	1.38	1	5
No. of children 13–17 years of age	-0.10*	1.48	1.34	1	5
No. of children 18+ years of age	-0.10*	2.20	1.93	1	5
Single	0.14**	1.13	1.25	1	2
Married (or with partner)	-0.20**	1.71	1.51	1	2
Hours/week: Administration	0.00	4.99	4.99	2	18
Hours/week: Teaching	0.05	10.48	10.80	3	27
Hours/week: Research/writing	-0.12**	2.94	2.51	1	9
Hours/week: Creative products	0.00	1.69	1.71	1	9
Hours/week: Client consultation	0.05	1.47	1.60	1	9
Hours/week: Community service	0.04	2.15	2.24	1	9
Hours/week: Outside consulting	-0.03	1.64	1.57	1	9
Hours/week: Household duties	0.15**	3.45	4.10	1	9
Held administrative post	-0.11**	1.44	1.32	1	2
Received award for teaching	-0.06	1.30	1.25	1	2
Spouse/Partner is an academic	-0.14**	1.36	1.22	1	2
Commute a long distance to work	0.00	1.24	1.24	1	2
Spouse/Partner works in same city	-0.12**	1.49	1.36	1	2
Was sexually harassed here	0.11**	1.03	1.09	1	2
Developed new course	0.00	1.59	1.59	1	2
Held faculty senate office	-0.04	1.21	1.17	1	2
Primarily interested in research	-0.08*	2.14	2.00	1	4
No. of articles	-0.23**	2.69	2.00	1	6
No. of chapters	-0.09**	1.54	1.38	1	5
No. of books	-0.07*	1.61	1.47	1	6
No. of exhibitions, performances	0.01	1.52	1.56	1	7
No. published in past two years	-0.04	2.16	2.05	1	7
Research work done with others	-0.01	1.52	1.50	1	3
Worked with students on research	-0.11**	1.68	1.57	1	2
Had funded research	-0.08*	1.44	1.36	1	2
Served as a paid consultant	0.00	1.48	1.47	1	2
University	-0.04	1.29	1.24	1	2
Four-year college	0.00	1.57	1.56	1	2
Private institution	0.04	1.25	1.28	1	2

NOTE: Negative correlations indicate that women scored lower on the predictor than men. Academic rank coded on a 4-point scale, where 1 = professor and 4 = assistant professor.
* $p < 0.05$. ** $p < 0.01$.

Conducting research and writing, having research funds, research interests, and students to aid in their research productivity may be indicative of men's higher professional status, resulting in the greater likelihood of their having supports and resources in place to pursue and complete scholarly endeavors. This would also explain why male faculty have more publications of all types—articles, chapters, and books—than their female peers. The only work-related experience that women encounter significantly more often than men is being sexually harassed. Thus the lower scholarly productivity of African American female faculty, compared to their male counterparts, along with their lower professional status may help explain the higher levels of stress experienced by African American female faculty.

Explaining Stress

Table 5 presents the results of the regressions explaining stress as defined by the five constructs—time constraints, home responsibilities, governance activities, promotion concerns, and overall stress. Based on our earlier examination of institutional differences across stress measures (see Table 1), the areas where faculty experience the least amount of stress are those of home responsibilities and governance activities. Looking at the variables that explain stress related to home responsibilities, more than half are home- (rather than work-) related sources. Number of children and hours spent on household duties are positively related to stress in this area, whereas marital status has a negative relationship. The results show that married faculty experience less stress, perhaps in part because they have a partner with whom to share responsibility for household chores. Married faculty are more likely to be men, and traditional societal views have seen the attention of men to household chores as added contributions rather than expectations or responsibilities. Married women faculty may not perceive their household duties as adding stress, with whatever support they receive from their spouse helping to reduce stress in this area. On the other hand, single faculty (unless they are also parents) may be better able to balance attention of their household chores with the demands of their professional work, thereby reducing stress from household responsibilities. Of the professional status variables, faculty who have higher salaries (who are also likely to be men) experience less stress related to home responsibilities. Roughly 30% of stress related to home responsibilities is accounted for in this model.

Although stress related to governance activities is an area where relatively low levels are reported among African American faculty in general, women tend to experience higher levels than their male counterparts in

TABLE 5
Standardized Regression Results

Independent Variables	β s Predicting				
	Overall Stress	Time Constraints	Home Responsibilities	Governance Activities	Promotion Concerns
Academic rank	-0.047	-0.041	0.040	-0.155**	0.009
Has doctorate	-0.001	0.023	-0.043	-0.087	0.035
Base institutional salary	-0.003	-0.093*	-0.090*	-0.055	-0.055
Tenured	-0.027	-0.043	0.002	-0.007	-0.073
Years at present institution	-0.019	-0.035	-0.046	0.010	-0.043
No. of children 0-4 years of age	0.026	0.011	0.190**	-0.071	-0.046
No. of children 5-12 years of age	-0.041	-0.060	0.149**	-0.107**	-0.070
No. of children 13-17 years of age	-0.047	0.006	0.086*	0.122**	-0.004
No. of children 18+ years of age	0.002	-0.057	0.014	-0.050	-0.029
Single	-0.054	0.002	-0.135**	0.122*	-0.064
Married (or with partner)	-0.076	0.035	-0.085*	0.032	-0.116*
Hours/week: Administration	0.070	0.004	-0.048	0.049	-0.049
Hours/week: Teaching	0.019	0.009	-0.074*	0.027	0.058
Hours/week: Research/writing	-0.049	-0.020	0.020	-0.080	-0.003
Hours/week: Creative products	0.000	-0.001	0.001	0.002	-0.049
Hours/week: Client consultation	0.014	-0.026	-0.049	-0.041	0.032
Hours/week: Community service	0.002	0.059	-0.030	0.058	0.022
Hours/week: Outside consulting	-0.019	-0.058	0.016	-0.025	0.015
Hours/week: Household duties	0.062	0.074	0.301**	0.064	0.069
Held administrative post	0.009	-0.026	0.008	0.016	-0.024
Received award for teaching	-0.002	-0.023	-0.037	0.089*	-0.030
Spouse/Partner is an academic	0.061	0.007	0.025	-0.006	0.053
Commute a long distance to work	0.019	0.023	0.018	-0.004	-0.020
Spouse/Partner works in same city	-0.036	-0.024	-0.009	0.003	-0.019
Was sexually harassed here	0.086*	0.116**	0.029	0.069	0.093**
Developed new course	0.065	0.078*	-0.050	0.116**	0.065
Held faculty senate office	-0.059	0.020	-0.001	0.066	-0.033
Primarily interested in research	0.194**	0.087*	0.015	0.039	0.085*
No. of articles	-0.084	0.023	-0.023	-0.015	-0.030
No. of chapters	0.004	0.002	0.003	-0.015	-0.020
No. of books	-0.026	-0.021	0.065	-0.005	0.031
No. of exhibitions, performances	0.059	-0.042	0.010	0.040	0.064
No. published in past two years	0.051	0.091*	-0.011	0.053	0.078
Research work done with others	0.003	-0.016	0.000	0.040	-0.008
Worked with students on research	0.060	0.026	-0.046	-0.042	0.093*
Had funded research	0.007	0.039	0.065	0.021	0.020
Served as a paid consultant	-0.018	0.077*	0.076*	0.052	-0.063
University	0.121*	0.019	0.033	-0.101	0.136*
Four-year college	0.138*	-0.022	0.111*	-0.078	0.134*
Private institution	-0.005	0.080*	-0.006	0.007	-0.040
Female	0.152**	0.166**	0.049	-0.005	0.029
Multiple <i>R</i>	0.379	0.396	0.566	0.358	0.385
<i>R</i> -square	0.144	0.157	0.321	0.128	0.148
Adjusted <i>R</i> -square	0.097	0.111	0.284	0.080	0.102

Note: Academic rank coded on a 4-point scale, where 1 = professor and 4 = assistant professor.
* $p < 0.05$. ** $p < 0.01$.

each type of institution (see Table 1). This is further evidenced by the presence of being single as a positive predictor and academic rank as a negative predictor of stress in this area, because African American women faculty are more likely to be single and of lower academic rank (see Table 5). Having adolescent children positively contributes to greater stress in this area, whereas those who have preadolescent children experience less stress. This may suggest that professional demands in this area are competing with faculty's needs to devote time to the demands or needs of adolescent children. Also contributing to stress in this area are teaching activities—being rewarded for teaching and developing new courses. This suggests that governance activities compete for time desired to devote to quality student learning experiences. Governance activities are usually centered around scheduled meetings and often demand much more time than planned. Moreover, devoting more time to governance activities would restrict the flexibility faculty usually have in deciding how they work best, causing problems in their time management.

Common stressors. Areas where African American faculty tend to experience greater amounts of stress are promotion concerns, time constraints, and overall stress. Most of the variables that explain stress in these areas are associated with the work experience as well as being a woman. Sources of stress common to these three areas will be discussed together. The two common predictors of all three stress areas are having research interests and being sexually harassed. The presence of having research interests as a common predictor of the three most common stressors may be indicative of the role of internal motivation in sustaining African Americans in a profession that marginalizes many while offering few external rewards. Their research may serve the void-filling function of correcting historical omissions, while offsetting some of the negative aspects of the workplace that contribute to stress in these areas. At first look, one might consider this a positive experience, because earlier research (Olsen, Maple, & Stage, 1995) evidences a positive relationship between research interests and job satisfaction. However, for those who concentrate their research on African Americans, this focus is often a vehicle through which others reinforce the marginality of African American faculty. Sustaining the integrity of their work while finding sources for publication and validation presents problems for many African American scholars when promotion decisions are being made. This has historically been the response to African American scholarship and is not unlike the initial response to feminist scholarship.

Sexual harassment as a predictor of these three stress areas—time constraints, promotion concerns, and overall stress—suggests that being

victimized in this way poses concerns for both male and female African American faculty. Because the perpetration of harassment is associated with the exertion of power, and because being African American, either female or male, is associated with low status both in the academy and in the larger society (much like being a female of any race), African Americans appear to be likely targets when power is exercised over their desire to advance or remain in this profession. This predictor suggests that African American male and female faculty, along with being targets, share a concern as to how their responses to these incidents will affect their ability to advance professionally.

Results found in research by Dey, Korn, and Sax (1996) showed that African American women (and women of color, generally) are not more likely to be harassed because they are African American, but because they are in low status jobs. However, African American women experience "constant cultural assaults on their identity" (Dugger, 1996, p. 36), stemming from historical stereotypes. Thus even when negative labels are not publicly used, others may be exercising their historical, cultural privilege to victimize those whom they have been socialized to view as of lower status. One African American woman's response to why she had remained silent about the long-term harassment she had received in the workplace was "When the president of the United States gets on national television and discounts the credibility of an educated professional . . . like Anita Hill, what chance do I have that someone is going to believe me?" (Boyd, 1993, p. 11). These concerns and others may be exacerbated by colleges' and universities' responses to harassment and victimization of any kind. Many institutions have just begun to acknowledge the seriousness of these incidents, and many have yet to provide adequate resources for the resolution of these issues. To the extent that they do not also recognize the emotional costs to victims and the resulting loss of time, energy, and motivation due to demoralization, the adequacy of the supports already in place must be questioned. Thus marginalization in the workplace may result from being alienated by victimization as well as from inadequate resources for addressing these concerns, thereby contributing to greater stress in these areas.

Other variables explaining these stressors are "being married" or "living with a partner" as a negative predictor and "mentoring students in research" as a positive predictor of promotion concerns. The former indicates that married faculty are less likely to experience stress related to promotion concerns, possibly suggesting that some of the effects of marginalization are reduced by not being isolated both in and out of the workplace. The latter predictor suggests a possible concern that the commitment to mentor students in research may negatively impact fac-

ulty productivity, creating additional concerns related to faculty promotion. Working in environments that value and expect more research—universities and four-year colleges—also contributes to stress related to both promotion concerns and overall stress.

Contributing to time constraint-related stress along with research interests are having lower salaries, developing new courses, producing research, working as a paid consultant, and working in private institutions. When we consider other variables significantly correlated with time constraints (see Table 6), we find that faculty who are tenured and have been at their present institution longer experience less stress in this area, whereas faculty who spend more time writing, publishing, and developing courses experience more stress. These are time-consuming faculty responsibilities for which junior faculty (those with lower salaries) are more likely to be devoting time. Moreover, faculty who spend time consulting, regardless of rank, may be attempting to offset the hardship incurred by their lower institutional base salary.

One of the greatest contributors of stress in two areas where greater stress is experienced—time constraints and overall stress—is being an African American woman. This may be partially explained by their fairly recent entry into a white, male-dominated profession and the responses of others to them in these roles. African American women are not new to juggling home and family responsibilities with work force participation. They have constructed definitions of womanhood that include both (Davis, 1981). Whereas white feminists portray the home as a major source of women's oppression, many African American women find home and family affirming of their humanity and a refuge from the hostility of the larger society (Dugger, 1996). However, because many African American women in faculty roles are single and in a profession that usually requires relocation to secure a job, the affirmation of home and family are not always readily available to them. Thus marginality among many African American women faculty is frequently heightened by their distance from loved ones and their participation in often unwelcoming environments. The stress related to meeting regular faculty productivity demands while also juggling role expectation as outsiders in a white, male-dominated profession are usually not anticipated or acknowledged by others.

Conclusions

McGrath (1976) has suggested that stress exists where the element of threat is related to the availability of resources for successfully meeting the demands of one's job. From this perspective the types of experiences

TABLE 6

Zero-Order Correlations of Predictor and Dependent Variables Used in the Regressions

Predictor Variables	Overall Stress	Time Constraints	Home Responsibilities	Governance Activities	Promotion Concerns
Academic rank	-0.01	0.00	0.10**	-0.11**	0.03
Has doctorate	0.08*	0.12**	-0.01	-0.05	0.10**
Base institutional salary	0.00	-0.07	-0.18**	-0.00	-0.08
Tenured	-0.05	-0.07*	-0.09*	0.09**	-0.12**
Years at present institution	-0.06	-0.09**	-0.08*	0.04	-0.10**
No. of children 0-4 years of age	-0.00	0.01	0.43**	-0.14**	-0.06
No. of children 5-12 years of age	-0.07	-0.06	0.37**	-0.12**	-0.11**
No. of children 13-17 years of age	-0.05	-0.02	0.26**	0.10*	-0.04
No. of children 18+ years of age	-0.07	-0.12**	0.04	-0.02	-0.11**
Single	0.02	0.01	-0.25**	0.07*	0.04
Married (or with partner)	-0.08*	-0.02	0.13**	-0.05	-0.13**
Hours/week: Administration	0.06	-0.01	-0.03	0.08*	-0.07
Hours/week: Teaching	0.01	0.02	-0.01	0.07	0.08*
Hours/week: Research/writing	0.07	0.08*	0.03	-0.07	0.12**
Hours/week: Creative products	0.07	0.00	0.00	0.08*	0.05
Hours/week: Client consultation	0.00	-0.05	-0.05	-0.00	0.00
Hours/week: Community service	0.01	0.02	-0.02	0.09*	0.01
Hours/week: Outside consulting	0.01	-0.03	0.00	0.02	0.03
Hours/week: Household duties	0.07	0.11**	0.43**	0.03	0.05
Held administrative post	-0.01	-0.05	-0.05	0.06	-0.07*
Received award for teaching	-0.02	-0.04	-0.07*	0.11**	-0.05
Spouse/Partner is an academic	0.03	-0.01	0.05	0.00	0.01
Commute a long distance to work	0.02	0.03	0.05	-0.01	0.00
Spouse/Partner works in same city	-0.05	-0.05	0.06	0.00	-0.05
Was sexually harassed here	0.13**	0.14**	0.01	0.08*	0.12**
Developed new course	0.11**	0.16**	0.01	0.12**	0.12**
Held faculty senate office	-0.04	0.03	0.02	0.09*	-0.03
Primarily interested in research	0.20**	0.15**	0.03	-0.02	0.16**
No. of articles	0.00	0.07*	-0.04	0.01	0.02
No. of chapters	0.02	0.06	-0.02	0.01	0.01
No. of books	0.01	0.00	0.00	0.04	0.03
No. of exhibitions, performances	0.11**	0.01	0.04	0.09*	0.11**
No. published in past two years	0.13**	0.16**	0.00	0.06	0.16**
Research work done with others	-0.04	-0.07	0.01	0.02	-0.06
Worked with students on research	0.12**	0.10**	-0.06	0.00	0.16**
Had funded research	0.09*	0.13**	0.04	0.00	0.12**
Served as a paid consultant	0.03	0.11**	0.03	0.07	0.00
University	0.06	0.08*	-0.05	-0.06	0.07*
Four-year college	0.06	0.00	0.07*	0.00	0.05
Private institution	0.04	0.11**	0.01	-0.02	0.00
Female	0.17**	0.20**	0.04	0.05	0.08*

NOTE: Academic rank coded on a 4-point scale, where 1 = professor and 4 = assistant professor.

* $p < 0.05$. ** $p < 0.01$.

that explain heightened levels of stress along with the marginality of African Americans in academe are likely to contribute to the undesirability of faculty positions as well as the retention of faculty within them. Added to this is the amount of time between the completion of tasks and their outcomes (e.g., acceptance of publications, evaluation, and promotion). Being a member of a population that is regarded as having low status in the larger U.S. society and culture as well as in the academy coupled with the lower-ranking faculty status of most African Americans in predominantly white colleges and universities compounds the decision-making process related to remaining in a profession where the rewards are both long-range and few. Because their role in the academy further distances African American faculty from their own community, the decision to remain in a work environment that is devoid of rewards and laden with demands comes into question. The historical, inequitable treatment of women in the workplace compounds the issues of low status due to both race and gender for African American women faculty even further. Stress as a condition of work has the potential to impact negatively the overall well-being and the employment decisions of African American faculty in general and that of African American women in particular.

One area of grave concern has to do with the sexual harassment of both African American male and female faculty, because it further reinforces their race-related social status. Harassment is a power vehicle used to demoralize and marginalize victims. Through these data we are unable to determine the likelihood of African Americans for reporting incidents of harassment or their means of coping with these experiences. This is an area clearly in need of further examination, not only because of the threat to the professional advancement of African American faculty but because of the potential danger to individual health. Research on racial discrimination and health (Krieger & Sidney, 1996) evidenced blood pressure to be highest among African Americans who experience discrimination in multiple areas of their life but perceive limited or no resources for overcoming the adversities. Conversely, those who experienced adversity but had resources or outlets to address unfair treatment had lower blood pressure. How African American faculty perceive the adequacy of college and university services and potential responses to their charges and emotional needs should be addressed. These experiences threaten the individual's perceived potential to advance professionally, even when the victim's work is valued.

If issues of power, status, and victimization are evident through the examination of sexual harassment, it is possible that they would be even more evident through examination of issues of racial discrimination. However, these issues are beyond the scope of this study, given the un-

availability of specific questions in this area. Moving beyond the boundaries of culture-imposed stereotypes and their resulting discrimination is an ongoing process and challenge even for the most well-intentioned. Rabbi Stephen Fuchs (1996, p. 60) captures this difficulty in an article on race relations when he quotes the work of an anonymous poet:

It's easy to sit in the sunshine
And talk to the man in the shade
It's easy to sit in a well-made boat
And tell others just where to wade
It's easy to tell the toiler
How best to carry his pack
But you'll never know the weight of the load
Until the pack is on your back.

Given the importance and salience of these issues today, our social perceptions of both gender and racial groups must be challenged as we attempt to tackle discrimination and harassment issues of all types. It is an area that, even without further examination, can be directly addressed by colleges and universities through policies and practices. As colleges and universities struggle to diversify their faculties, the need to recognize the challenges that African Americans and other marginalized groups face is critical. The need for each member of the academic community to recognize his or her contribution to the marginalization of others is even more critical. Balancing the demands of a scholarly career with the multi-marginality often experienced in academic careers is a difficult challenge and one that often goes unobserved by the academy. Understanding the cost in emotional well-being and physical health to marginalized groups in these situations is a first step, but only a first step, in helping to resolve these concerns. Much more research and progress are needed to support institutional efforts to increase faculty racial and gender diversity.

Notes

¹Derrick Bell quotes writer Jill Nelson.

²Academic rank is coded so that 4 = lowest rank (assistant professor or lecturer).

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Book Reviews

Shaping the College Curriculum: Academic Plans in Action,
by Joan S. Stark and Lisa R. Lattuca. Needham Heights, MA:
Allyn and Bacon, 1996. 480 pp. \$41.95

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Higher education plays a pivotal role in contemporary American life. Its three-pronged mission of research, teaching, and service to the larger society places it at center stage in simultaneously producing knowledge, socializing, and credentialing the citizenry and contributing to planned social change. A free society, however, entertains many views of what each of these should entail, and it is therefore not surprising that an institution of such broad scope and promise should fall prey to criticism at nearly every turn. For example, questions have been raised as to whether access to higher education remains effectively blocked to those categorically denied it in the past, whether the quality of academic programs has declined, and whether postsecondary education should be more vocational or more broadly classical in its thrust. Lying at the very heart of debates such as these are questions about what the courses, departments, programs, and colleges under discussion should be doing and how they should do it. While these two questions are arguably the most basic ones faced by the academy, they are also among the thorniest in that their answers establish the academic plans under which an institution of higher education expects to operate. From what bases should professors and administrators proceed as they seek to answer them with effective academic plans?

Proposing that academic plans manifest as curriculum, Stark and Lattuca advance a systematic model for developing an effective curriculum at the course, program, and college levels. This is an ambitious undertaking made all the more so by the many points of view one finds in a pluralistic society. Forging an appropriate curriculum thus requires a consideration of many factors, each of which is complex in its own right. Any attempt at synthesizing them must necessarily embody a corresponding level of complexity and *Shaping the College Curriculum* is no exception. This book is a long and meaty one that, though generally well developed and presented, can overwhelm its reader with the sheer volume of the information it contains. At the same time, however, it offers a readily accessible compendium of information that is sure to be welcomed by practitioners and administrators alike.

The book proceeds, chapter by chapter, by elaborating the elements of an eight-factor model speaking to the closed and open systems properties of an academic plan. The authors note that this particular model, while sensitive to many of the shortcomings identified by others in their global reviews of the academic and applied literatures on curriculum, is but one approach to a complex

subject. A strength of the model presented by Stark and Lattuca is that it avoids the temptation to view curriculum as little more than a lineup of courses that on successful completion leads to the award of a degree. Although this common sense understanding of curriculum is indeed explored by treatments of purpose, content, and sequence in courses and programs, there are also analyses of the learners presumably served by the execution of an academic plan, of processes through which an academic plan is tactically rendered, of mechanisms and philosophies for the assessment of an academic plan's efficacy, and of the continual review and adjustment to which academic plans ought to be subjected in assuring that they realize the objectives for which they have been created.

Chapter 2 offers a cursory overview of the eight elements and their interrelationships. Chapter 3, in appropriate scholarly tradition, presents a review of the literature on curriculum from the perspective of each of the eight elements in the model. Consolidating and organizing the literature in this way sets the stage for the authors' main objective, the development of an integrated curriculum theory. Throughout the chapter the point is made that most work in curriculum theory has been done at the elementary and postsecondary levels. Education at these levels has been more successful in standardizing plans within a particular context and has also had a more realistic chance of responding to societal demands. In large part, this is because these contexts are governed by stated philosophies that are themselves responsive to the audiences they seek to serve. In contrast, postsecondary education, as "the marketplace of ideas," is incredibly diverse and attempts to realize many discrete missions under the single umbrella of a college or university structure. Embracing diversity in all its forms and chartered by its sanctioning bodies to do so even more, the academy may thus be on a fool's errand when searching for stable and enduring patterns of any kind. Nonetheless, Stark and Lattuca skillfully extract what is presently known in each area of their model, regardless of the venue in which that knowledge was generated, and apply it to the higher educational setting. In Chapter 4 their overview continues but this time in the form of a historical review of how each factor of the model enlightens our understanding of contemporary problems and issues in higher education. In particular, the reader will find here conveniently summarized renderings of general versus specialized education, the issue of access to higher education, choice versus prescription, emphasis on passive versus active learning, and the debate over evaluation, accountability, and quality control. A particularly valuable feature of this chapter is its single-page pictorial summaries of the problem and issue domains. There is a logical connection between Chapters 4 and 5 in that Chapter 5 delves into calls for curriculum reform, many of which directly address the recurring debates chronicled in Chapter 4. Once again, drawing on the elements of their model, Stark and Lattuca cross-compare a number of major studies and reports, including such recent offerings as *Integrity in the College Curriculum*, *To Reclaim a Legacy*, *Involvement in Learning*, *Higher Education and the American Resurgence*, *To Secure the Blessings of Liberty*, *Transforming the State Role in Higher Education*, *Time for Results*, *College*, *Humanities in America*, *50 Hours*, *An American Imperative*, *A New Vitality in General Education*, *Strengthening the Ties that Bind*, *Unfinished Design*, *Scholarship Reconsidered*, *The Challenge of Connecting Learning*, *Reports from the Fields*, *Program Review and Educational Quality in the Major*, and *Sustaining Vitality in General Education*.

The reader of this review will observe that nearly two dozen works are examined in Chapter 5. Unless one is already somewhat familiar with each, digesting what Stark and Lattuca have to say about them could prove to be a daunting task. Perhaps a presentation in pictorial fashion, much as had been done with the material documented by Chapter 4, could have reduced the challenge to the reader. Chapter 6 is a general examination of the planning process, especially at the course level. The authors report research on how professors have approached the details of course planning and establish that differences in academic disciplines themselves are important determinants of how professors develop their plans at the course level. The impact of disciplines is shown to be of such importance that Chapter 7 is devoted to an exploration of the academic fields themselves. Here the reader is exposed to various attempts at discovering underlying patterns that make variation across the disciplines in some way interpretable. Stark and Lattuca once again are adept at extending their analysis from previous research and supporting their conclusion that effective academic plans will require a conscious awareness of how balance within the fields is achieved even as the fields themselves reflect an interconnectedness among them. The implication is that more effective academic plans will emerge only when faculty and administrators begin thinking "outside the disciplinary boxes" to which they are normally accustomed. There is a clarion call for academic leadership here because a tendency to ever increasing specialization in the fields fosters an inward-looking rather than an outward-looking perspective. Given the imperatives of research, publication, and teaching faced by the individual professor, only unit-level leaders are likely to be organizationally situated and empowered to pursue such an agenda. Chapter 8 portrays the influence of learners on the academic plan. This is an especially strong chapter, for Stark and Lattuca are correct in noting that learner demographics and their styles of learning have not figured prominently in the development of academic plans. Its recognition that "the proof of the pudding is in its tasting" acknowledges that outcomes of educational processes inevitably depend on the characteristics of those who are expected to somehow "change" after an academic plan has been administered. As such, it anticipates a discussion of Total Quality Management (TQM) appearing near the end of the volume. Readers may find particularly instructive Stark and Lattuca's discussions of the needs and challenges presented by adult students, minority students, and underprepared students. Chapter 9 explores how the delivery of subject matter content and the meeting of such ambiguous-sounding educational objectives as "fostering intellectual development," "developing study skills and learning strategies," "promoting reflection and developing metacognition," and "cultivating effective thinking" are intertwined with the selection of appropriate instructional processes. An especially noteworthy feature of this chapter is its contribution of a series of postulates bearing upon these matters. Readers will find the discussions of peer teaching, learning communities, case study methodologies, collaborative and cooperative learning, and many other topics current in the discourse of decision makers in higher education both instructive and pragmatically useful. Chapter 10 deals with the evaluation and adjustment of academic plans, certainly a 'hot' topic given contemporary calls for accountability. In general, the further removed from individual classroom contexts, the more difficult assessment becomes. Interestingly, Stark and Lattuca develop many alternative views of what constitutes meaningful evaluation. Some of these approaches will be met by resis-

tance on the part of readers uncomfortable with examining the basic questions of whose criteria should be used for evaluation and what those criteria ought to be. The very asking of these questions serves to weaken the professoriate's traditional authority in this area by its implication that other stakeholders such as students, departments, units, colleges, and accrediting agencies should have a say in the matter. However, triangulating on the subject of evaluation serves to stretch one's thinking and encourages the challenging of paradigms. In doing so, it has the curious effect of asking readers, primarily professors and administrators (or aspirants to those roles) themselves to be open to inquiry and the search for truth. In short, those who lead will be asked, on this occasion at least, to follow. Is that not what education must always entail? Chapter 11 concerns itself with the administration of academic plans and the need for effectively guiding change. Practicing administrators are the primary targets of this chapter's lessons. There is a fruitful discussion of how change in higher education requires effective coordination of its major stakeholders and the different roles that a change agent will have to assume at varying stages as change comes to be implemented. Chapter 12 offers a range of topical case studies (incorporating diverse perspectives, globalizing the curriculum, increasing coherence, connecting education with life and work, and improving the quality of educational outcomes) that illustrate how change involves stages of awareness-raising, screening for acceptability, and adoption of a choice. Again, because these are issues very much on the "front burner" of contemporary discourse in higher education, they merit special attention in light of what Stark and Lattuca have to say about curriculum change. Finally, Chapter 13 concludes the book with an obligatory summary, a statement of caveats, and the hope that the work will prove useful to practitioners, policy-makers and decision makers at all levels.

In conclusion, Stark and Lattuca have produced a thoughtful and thought-provoking treatment of a subject that by its very nature is incredibly complex. It is difficult to read in some places and speaks of the obvious in others. These are faults that can be readily forgiven once one has completed the volume, however, because the book offers in one place a treasure trove of knowledge directly applicable to the mission of higher education and the work of those who must somehow be coordinated as they seek to realize it.

Student Affairs Reconsidered: A Christian View of the Profession and Its Contents, edited by David S. Guthrie. Lanham, MD: University Press of America, 1997. 152 pp. \$46.00 (\$26.50)

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The introductory remarks of this book set its tone and nature. The editor, David Guthrie, states that Christian faith "goes beyond just Sunday morning service; rather, it is a viable wellspring of thoughts and actions, in both public and private spheres, and is clearly within our work as educators" (p. xi). He reminds other Christian professionals that because Christians are created in this world and redeemed in this world they are not to put their faith in the closet when they go to work.

Although the primary audience for this book is readers who work at or attend

Christian colleges, the book raises helpful questions also for those of us involved in the broader fabric of American higher education. Consistently we hear that one key aspect of organizational effectiveness is the degree to which an institution has a mission, or vision, and is able to enact it. In addition to distinctive institutions such as Reed or Swarthmore, one obvious place to study, if we desire to learn more about institutional missions, is a religiously affiliated college. And yet, we discover from this text that at the close of the twentieth century, Christian institutions appear to have as difficult a time as their counterparts in the mainstream with developing and implementing distinct views of themselves.

Student Affairs Reconsidered begins by elaborating upon the theoretical and theological framework that the authors hold. The "development of wisdom," according to David Guthrie, is the primary goal of student learning. Fine enough. But what does this mean in the creation of our curricula, the development of student affairs activities, or even in the creation of a health clinic on a campus? The authors argue that a Christian perspective has to do more than simply speak of excellence or develop "well-rounded" students in abstract terms. In the book's seven chapters the authors bring a renewed perspective to a very traditional concept of student development. Truth is not relative, they argue, it is foundational, and if it is, then action springs from such a belief. The initial chapter works as a guide for the reader and establishes what is meant by a unique Christian world view.

Chapter 2 offers a helpful, albeit brief, history of the student affairs profession in general, with five specific, chronological periods in which the profession has developed and emerged to where it is today. The authors, Barry Loy and William Painter, outline the significant and gradual shifts of the student affairs profession in several periods. They suggest that student affairs began with a focus on spiritual development (1636–1860), followed by humanitarian guidance (1860–1925). A shift in perception of the field occurred, and it moved from a focus on student services (1925–1960) to one of developmental science (1960–1985). The final epoch, from 1985 to the present, is considered a transitional period and raises the greatest challenges in these authors' view, for the Christian institution. Whereas it once was clear how the institution's mission connected to student affairs, today it is less so.

Chapter 3 applies the Christian view of the world to the college student personnel profession. The general conclusion is that student affairs must be seen within the larger context of student learning, and herein lies the weakness of the book. However compelling the idea is that specific kinds of institutions—in this instance Christian colleges—need to implement their visions, the reader needs some sense of what that means. We need tangible evidence of what such a student affairs office might look like and how it is different (and similar) from its counterparts in the public realm. Guthrie and his colleagues claim that "wisdom development" is an ultimate end and motivating factor of student learning, which is to be achieved through the application of three learning methodologies: remembering, discerning, and exploring. Guthrie suggests that the Christian world view considers "learning" a primary function of human activity. Student learning, he claims, should be viewed as a religious, purposeful, multidimensional, communal, and processual endeavor that transcends the Christian world view and could be applicable with dissimilar theoretical frameworks.

In chapters 4 and 5, different authors address Christian colleges' overall lack of educational coherence, and they challenge the Christian professional to be more engaged in the community, stating that now is the time for Christian colleges to distinguish themselves by providing a comprehensive student learning experience. In-class and out-of-class experiences must not be mutually exclusive, and members of the college campus, both professors and members of student affairs staffs, must work together to accomplish this goal. "Christian colleges," he states, "must not merely be colleges with chapel rooms, theology departments, and dorm Bible studies; . . . each aspect of the student learning experience—whether cognitive, psychosocial, vocational, or moral—not only must find proper expression in the Christian college, but also must be accepted and honored as a legitimate component of student learning by the institution's learning leadership" (p. 67). What might this mean, and what are its implications for basic ideas and tasks in the academy, such as academic freedom, research, or student learning?

Chapter 6 tries to address the more practical goal of *Student Affairs Reconsidered*. Authors Barnes and Harrington provide several model programs that reflect application of a Christian student affairs office, but their examples might be more effective if they were embedded as case studies or were thick with description; stripped of context, they appear more exhortative than instructional.

It has been said that the Reformation of the sixteenth century liberated Christians from viewing the world in terms of a secular/sacred dichotomy. In fact, both the Protestant work ethic and reformation theology posit that whether one is plowing snow or preaching the gospel, raising children or engaged in foreign missions, all of life is for the glory of God. No part of human activity is to be seen as somehow outside of or beyond the scope of God's interest or sovereignty. This helpful little book challenges those who work at Christian colleges to revisit their schools' mission statements to make necessary adjustments and practice what is preached. For those of us who are not involved in Christian education, *Student Affairs Reconsidered* raises questions about how we go about implementing what we believe.

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Classifying Professional Preparation Programs

Introduction

As early as the eighteenth century, faculty members in colleges and universities began to gather into specialized discipline groups. Observing how these groups have evolved, curriculum theorists have noted that the nature and structure of knowledge in traditional domains, such as mathematics or history, give each discipline a distinctive character. Scholars have also noted that, over time, specialized groups of faculty have become more distinct in their interests and communication patterns. The distinctive character of each field means that appropriate and accepted techniques vary not only for inquiry but for teaching, for assessing student learning, for collegial governance, and for organizational structure. Higher education researchers now regularly take these differences into account, arguing that it is not appropriate to generalize from single disciplines, nor to draw conclusions based on data from large aggregations of disciplines.

Although differences among arts and sciences disciplines that might affect research results have been extensively explored, the characteristics of heavily enrolled American undergraduate professional fields (ranging from architecture to social work) have received less attention. It is typical to find disparate fields that constitute collegiate level career studies aggregated in both research and practice. Typically, the aggregate is labeled "applied fields," "professional studies," or "the professional schools." Alternatively, research conclusions are drawn from one or two fields that may poorly represent the diversity of applied under-

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graduate professional training in today's universities. In part, failure to disaggregate the professional programs occurs because unique characteristics of these fields, such as linkages with practice communities and development of professional commitment, are less well known than are characteristics such as "paradigm consensus" by which the disciplines are often classified.

In this article I intend to (1) propose that the professional subjects taught to undergraduates in colleges can (and should) be distinguished from one another as the major divisions of the traditional disciplines have been; (2) argue that within the set of fields that may be labeled "applied" other distinctions may be more meaningful than the hard/soft and life/nonlife divisions so often used in research-based classifications; (3) propose a new framework for differentiating and classifying the professional fields; (4) review some evidence that supports the resulting classification framework; and (5) suggest some next research endeavors that could validate the framework and produce a useful typology of the collegiate career fields based on the framework.

Characteristics of Collegiate Career Studies (Professional Preparation Fields)

In most colleges and universities the majority of enrollment is not in academic fields that are often considered the pure disciplines; rather, most students are enrolled in programs that aim to prepare them for professional and occupational careers. Despite recent campaigns to establish the liberal arts as the most appropriate collegiate study, many educators, students, and parents claim that career fields provide an equally appropriate, but quite different, education that meets students' needs and interests. Policymakers, as well, see education in professional fields as essential to a competitive economy and an international presence.

Yet ambiguity about undergraduate professional programs has been so enduring that scholars have not even evolved a clear nomenclature for them. Although often called professional fields, some sociologists argue that they do not meet traditional criteria to be called professional as do the "learned professions" of law, medicine, and theology.¹ For example, in many cases, such as nursing and pharmacy, members are admitted by state licensing rather than directly by the professional group. Other scholars observe that many undergraduate applied fields (and in modern times even the learned professions such as law!) fail to meet the service ethic or standard of "altruism" that traditionally has been a criterion for professionalism. Some writers have used terms such as "semi-professions," "quasi-professions," or "minor professions" to remind us that the

undergraduate applied fields occupy low rungs on the social/occupational status ladder in universities, as well as in society. Yet, students continue to enroll in these fields in increasing numbers. Thus, higher education researchers will need to expand their studies of student development, curriculum, faculty careers, and organizational issues to include these fields.

My colleagues and I earlier described the set of undergraduate professional fields as "any program for which colleges typically require four years or more of education to gain basic career entry in a specific occupational field" (Stark, Lowther, Hagerty & Orczyk, 1986). To take a more definitive stance, Lisa Lattuca and I recently coined the term "collegiate career studies" for this group of programs (Stark & Lattuca, 1997). To us, "collegiate" implies a four-year program rather than an associate degree program and emphasizes achieving basic entry-level career status upon college graduation, avoiding confusion with professional fields offered only in graduate study such as law, medicine, dentistry, and veterinary medicine.² The term "collegiate career studies" has limitations,³ but at least it takes a step toward providing a manageable identifier for a mushrooming set of fields that require clearer recognition on campuses. I will use this phrase frequently throughout this article as synonymous with "undergraduate professional program."

Currently, there is no accepted list of collegiate career fields to use in higher education research. In many of our studies we have included education, business, nursing, engineering, journalism, social work, architecture, library science, and pharmacy. But we might have included other fields, such as public health administration, dietetics, art, music, occupational or physical therapy, interior design, accounting, forestry/environmental science, sports medicine, urban planning, agronomy, and computer science, to name only a few. As Gary Rhoades (1991) pointed out in an extensive review, collegiate career curricula (and those for the graduate level professions) have seldom been studied by higher education scholars. The few scholars who have studied them have nearly all lamented the lack of stable nomenclature and ways to group programs. What are the characteristics of collegiate career fields that might assist in developing a better understanding, a manageable list, and a classification system?

First, one important aspect of collegiate career fields is that all attempt to integrate content, theory, and practice. In simplest terms, faculty in the preparation programs teach academic content, necessary professional skills, and the context of the profession, thus preparing the graduate to enter practice at a basic competency level. Viewed more critically, the educational curriculum "extends and perpetuates the official

language, schemes, myths, and understandings which frame the professions and mark the professions off from the rest of society" (Smith, 1991). In other words, the educators also frequently engage in professional socialization.

Second, the faculty group that organizes and teaches the curriculum and provides cognitive and noncognitive initiations to the traditions of the field is usually different from the professional practitioner group. The extent to which the two groups agree, or even communicate, varies among fields, but in all fields they influence each other. A key distinction between the educator and practitioner components of a professional field is the educators' emphasis on pursuit of knowledge to advance the professional field. In tracing the history and evolution of professional education, Dinham and Stritter (1986) assert that, although professionals are users of knowledge rather than pursuers of knowledge, it is reliance on theory that distinguishes a profession from a craft. Thus research, as well as the integration of theory and practice, is important in collegiate career fields.

Third, the research questions that are important to faculty in the professional fields are likely to be pragmatic, interdisciplinary, and best approached with multiple strategies drawn from competing research paradigms. Although each collegiate career field relates to one or more foundation disciplines in the arts and sciences, researchers draw from these fields as needed in their problem solving. They may have little allegiance to a single research view.

I contend that the systems of classification to which higher education scholars frequently turn when studying the pure academic fields do not take into account these important characteristics of the collegiate career fields. To illustrate, I turn now to a review of some of these existing classifications.

Classification of Academic Fields: A Brief Review

Classifications are important to scholars because they help to bring order to a chaotic world. Typologies allow scholars to group things in a parsimonious number of categories that assist in grasping relationships and trends. Preliminary classifications of new sets of objects or phenomena can lead to the detection of previously undiscovered patterns and to the generation of theory to be tested. In both scientific and nonscientific fields, as in daily life, classification is a common activity. In higher education research, scholars have created typologies of students, faculty members, disciplines, and institutions that are well accepted and useful.

Scholars in several fields (history, philosophy, sociology, psychology,

and education) have inquired into why their colleagues in various academic disciplines have quite different approaches to education and research. In pursuing this question, several have classified programs based on their internal disciplinary structure or research approaches, whereas others have developed typologies based on how faculty operate in their departmental groups. Many such classifications were recently reviewed by Braxton and Hargens (1996). They note that most studies of variations in academic disciplines have focused on the dimension of consensus about scholarly paradigms. Some scholars concerned with teaching, learning, or curriculum issues have begun to adopt the same classifications based on whether the research of the fields are judged to be “hard” or “soft” in terms of paradigm consensus. I review some of these classification schemes briefly here to illustrate how they neglect some crucial nonresearch orientations that faculty members bring to their educational roles and also to assert that some of the most common schemes may fail to classify adequately the professional fields.

The simplest descriptions differentiate among disciplines in broad ways. Commentators consistently note that the sciences are hierarchical, sequential, and tightly knit; the social sciences are loosely linked by concepts and relationships; while the humanities are free in form and capable of expanding in any direction the human imagination leads (Bell, 1966; Halliburton, 1977; Toulmin, 1972). In a more complex scheme, Kuhn (1970) theorized that disciplines employ different cognitive frameworks, select different problems for study, use different methods for studying the problems, make different types of generalizations, and use different examples to illustrate their conclusions. These differences are easily observed in qualitative studies by examining the way instruction, curriculum planning, research, and general discourse occur in the fields. For example, Kolb (1981) classified fields on learning style dimensions (from abstract to concrete and from reflective to active), whereas Becher (1989) based his classifications on how the fields interact with each other in discourse communities, the types of problems they study, and their research visibility (pp. 79–82). Becher coined the terms “urban and rural” communities, which appear to correlate strongly with the degree of paradigm consensus usually distinguished as “hard and soft.”

*A Classification based on Research Paradigms:
The Biglan Scheme*

Perhaps the best-known and most-used empirically developed classification is the one developed by Anthony Biglan in the early 1970s (Biglan, 1973a, 1973b). Biglan’s original theory was based on three pri-

many assumptions: (1) that academic efforts are directed primarily by theories, assumptions, and methodologies guiding scholarly work, (2) that faculty are reasonably accurate judges of emphases that guide not only their own field but other fields within the university, and (3) that an academic department is a fairly homogeneous grouping of individuals who share assumptions. Based on a survey of faculty members at a large university (and cross-validated at a smaller college), Biglan used multidimensional scaling to develop a three-dimensional typology of fields (hard/soft, pure/applied, life/nonlife). Subsequently this scheme has been extended to include a wider set of fields (Creswell & Roskens, 1981; Smart & Elton, 1982; Drees, 1982; Stoecker, 1993) and has been used by many researchers. Perhaps because of its intuitive appeal and convenience as a classification device, researchers have not been inclined to critique the original Biglan classification or to notice some of the anomalies that have developed as scholars have added more professional fields. Braxton and Hargens (1996, p. 14) merely note that some scholars have questioned whether this model holds for the full spectrum of colleges and whether the model describes differences across a wide range of academic behaviors.

Modern researchers acknowledge that the conceptual framework chosen often presages the results; for example, a typology likely has dimensions based on the survey questions the researcher asks. Biglan gathered subjective perceptions from faculty about how they characterized 36 different fields (other than their own) by posing several bipolar adjectives that he called "subject matter descriptions:" pure-applied, physical-nonphysical, biological-nonbiological, of interest to me-not of interest to me, traditional-nontraditional, life-science-nonlife-science. Because he based the study and the selection of the specific bipolar pairs on Kuhn's work, it is hardly surprising that Biglan labeled the dimensions he obtained through multidimensional scaling of responses as hard and soft. He then introduced the term "paradigm consensus," which he had not posed directly to survey respondents. Later researchers who validated the classifications using discriminant analysis and external criterion variables continued to use the language of paradigm consensus and to choose their external criteria accordingly. As Biglan describes his own work in the original articles it is clear that he intended to capture the research dimension of the discipline, especially at the graduate level.

Biglan's work was augmented by several scholars who continued to use data concerned with scholarly publications, academic reward systems, grant funding, and organizational arrangements as discriminators rather than data concerned with the educational duties of faculty members. These studies are summarized in a dissertation by Lauren Drees

(1982), who used items from the 1977 Ladd and Lipset survey as potential discriminators to bring the total classified fields to 73. In Drees's study, as in others, the categorizations were viewed as valid by investigator inspection and judgment; that is, the newly added fields "appeared to be like" those already in the category. Yet when those familiar with professional preparation programs examine several of the studies, they are struck by several anomalies. For example, in some studies, public health, law, and library science have been classified as pure, not applied, fields. Pharmacy, chemical engineering, architecture, and most of the fine arts are all classified as life, rather than nonlife, fields. Accounting (along with other business fields) surprisingly is classified as a "soft" field, that is, lacking paradigm consensus. There has also been a modest tendency to discuss the fields that "fit" but to ignore those that fail to fit. For example, for reasons that are not given, Biglan did not include art, music, speech, and drama in his original university sample and dismissed them readily as a "special case" in his liberal arts college sample. Drees eliminated ecology, anatomy, dramatics & speech, allied health, and journalism because her analysis showed they could equally well be assigned to one or more groups. More recently, in attempting to add 8 professional fields to the classification, Stoecker reported no clear pattern of distribution of the fields she worked with, and she speculated, "Newer fields, particularly professional fields, may not have had sufficient time to crystallize their intellectual domain and develop their scholarly tradition" (1993, p. 462).

My intent is not to challenge the validity of the Biglan classification scheme for arts and science disciplines in research-oriented universities. It surely has served as a useful classifier and produced many valuable research results. I submit, however, that another equally plausible explanation for Stoecker's lack of a clear pattern is that once a discriminator in the Biglan scheme has separated the applied fields from the pure fields, the remaining discriminators (paradigm consensus and life/nonlife) may be far less relevant for collegiate career fields than for traditional disciplines. It is conceivable, for example, that faculty in a collegiate career field could find consensus about professional socialization of students or about relationships with the practice community far more compelling than consensus about an intellectual or inquiry paradigm. This may be especially true in colleges where faculty concentrate primarily on teaching and many students concentrate in collegiate career fields. Put in statistical terms, within a large set of disciplines and professional fields, when the variance due to the applied/pure dimension is removed, considerable variance among applied fields may remain that cannot be explained by the hard/soft and life/nonlife dimensions.⁴

Potential Classifiers for Collegiate Career Fields

Based on the diverse set of programs under consideration and their unique characteristics, the list of potential classifiers for collegiate career programs is extensive. Some have made fledgling and informal attempts at classification. For example, McGlothlin (1964) called two sets of fields "helping" and "facilitating" based on the relative amount of time they devoted to social understanding versus technical competence. Other writers, acknowledging the importance of business and engineering in today's society, have introduced a distinction between "enterprising" and "helping" fields (Anderson, 1974; Nyre & Reilly, 1979). Based on the attention given to ethics in the educational program, Reeck (1982) labeled two groups of professional fields the "enablers" and "exploiters." In a discussion of how competence is evaluated in different professional fields, McGaghie (1993, p. 231) listed four categories of professions: helping, entrepreneurial, technical, and performing.

One could group the fields, as Donald (1983) did, simply by the similarity of the content base from the pure disciplines upon which they draw. To some extent professional fields carry the traditions of the base disciplines, but some have more than one base. Harris (1993) has suggested the importance of distinguishing professional fields based on whether the field views itself as teaching a technology, a craft, or an art. Following Schön (1989), she also mentions the importance of whether or not the field requires a "reflective practicum." Bucher and Stelling (1977) proposed a classification for professional preparation programs. The key classifiers included the type of knowledge base, the length of professional preparation program, the service orientation, and the degree of program autonomy. Another potential categorization of applied programs might be based on the type of work done—for example, working with people, data, things, or ideas, or various combinations. The "World of Work" map, used by the American College Testing Service in counseling students, shows a circular framework of 12 sectors in which different types of professional work fall.

In our previous research, my colleagues and I constructed comparative profiles of professional programs based on (1) desired educational outcomes, (2) types of curriculum debates, (3) external influences, (4) intraorganizational influences, and (5) internal influences (Stark, Lowther, & Hagerty, 1987). External influences include such considerations as relations with the practice community, inclusiveness of the professional self-regulatory system, degree of autonomy or freedom to practice, type of control society exercises over professional practice (licensing or certification), and homogeneity of employment settings. In-

traorganizational influences include resource allocations, prestige ranking, and other relationships within the university hierarchy. Internal influences include curriculum emphases, relative importance of theory and practice, emphasis on professional socialization, and the discipline foundations on which the professional field rests (Stark, Lowther, Hagerty, & Orczyk, 1986). These influences, based on program organization and context, encourage one to ask questions such as: How closely do faculty identify with the practice community? How much do they value teaching as compared to research? How much do they feel that their field is valued by society and by the university? We found that faculty perceptions of their collegiate career program in its existing context could be used to define a multidimensional "professional preparation environment" (Stark, Lowther, & Hagerty, 1987). The number of possible dimensions is nearly endless.

In contrast to classifications for the disciplines, most of the suggestions for classifying collegiate career fields have been insufficiently comprehensive, and they have not been fully developed nor empirically verified. The lack of development is unfortunate, because the various disciplinary dimensions and descriptions of academic cultures that scholars rely on provide so little help toward understanding the orientations of current faculty and academic programs that involve collegiate career studies.

For classifying professional fields I suggest a relatively parsimonious scheme based on a classification of the traditional academic disciplines by Phenix (1964/1986) that was later adapted by Dressel and Marcus (1982). I chose the Phenix framework because it includes both educational and research aspects, and it seemed to encompass some of the suggestions of earlier scholars as well as observations my colleagues and I have made about the differences among collegiate career fields. Phenix's scheme, which like our empirically derived "professional preparation environment" is multidimensional, seemed to provide a useful guide to understanding the unique considerations of professional fields.

A major educational typology: Phenix's realms of meaning. In a classic study of discipline differences, Phenix (1964/1986) used a philosophical approach, arguing that the disciplines represent the natural order of knowledge and therefore provide an appropriate organizing scheme for education. In his descriptive scheme of the disciplines, Phenix identified and described six common elements or "realms of meaning" and asserted that the fields may be characterized by the differing emphasis they give to each realm. Phenix's scheme became a foundation for many of the later classifications; several scholars have repro-

duced, expanded, and attempted to apply these “realms of meaning” in the disciplines, thus focusing more broadly than the Biglan studies. A useful synthesis of Phenix’ work by Dressel and Marcus (1982, pp. 89–90, 108–133) states that all disciplines have five types of “structures” or components:⁵

1. Substantive structure: Assumptions about the particular concepts of interest that control the questions asked and the inquiries undertaken. What are the types of problems with which the discipline deals?
2. Organizational structure: The set of principles relating a discipline to other disciplines, also called the “conjunctive” component, and dependent on the other four structures.
3. Value structure: A set of embedded values, orientations, or ways of viewing the world. What is worth studying and how should it be studied?
4. Syntactical structure: A system for collecting and organizing data, posing and testing hypotheses or assertions, and relating justified assertions to the broader generalizations and exploratory schemes of the discipline. What are the ways in which evidence is collected, organized, evaluated, and interpreted? In short, what is the mode of inquiry or the research paradigm?
5. Symbolic structure: A symbolic communication system (frequently linguistic or mathematical but sometimes nondiscursive). What is the symbol system that allows the expression of and communication about the unique aspects and relationships under consideration by the discipline?

Substantive structure denotes the multiple issues or problems that the field’s inquiry includes, whereas the syntactical structure corresponds closely to the tradition of research we call a paradigm and could be judged as consensual or nonconsensual. Thus the definition of research encompassed by substantive and syntactical structures combined is much broader than the bi-polar adjectives (such as biological-nonbiological) that were used by Biglan. In addition, the other components of the Phenix scheme, especially value structure and organizational structure (conjunction with other disciplines), take on far more importance when the world is viewed through the lens of the educator rather than the lens of the researcher. According to Dressel and Marcus, no teacher can fully understand or apply (or presumably teach) without grasping the ways each of these five components markedly influence their discipline’s nature and further development. Dressel and Marcus classified

each of the traditional college disciplines as contributing mostly to student intellectual development in one or more of the major "realms of meaning" that Phenix outlined. In this scheme, the *symbolic* disciplines include those that emphasize the means of thought, understanding and communication, including language, mathematics, and other forms of communication. The *substantive* disciplines are those that transmit the primary areas of knowledge and the means of attaining, testing, and organizing it. There are two subsets of substantive fields: *empiric* (including physical, biological, psychological, and social sciences); and *aesthetic* (including music, art, movement and dance, and literature). Finally, the *synoptic* disciplines are concerned with the interpretation and integration of meaning. These include history, philosophy, and religion.⁶ Of course, like other researchers, neither Phenix nor Dressel and Marcus applied this scheme to the collegiate career fields.

When asking faculty views about the educational rather than the research role, my colleagues and I posed a set of questions more like those mentioned by Dressel and Marcus than like the bipolar adjectives used by Biglan. Our studies on faculty course planning and program curriculum development clarified that faculty members do link educational orientations with their disciplinary background. In a very broad sense, based on their combined discipline view and educational beliefs, we found faculty could be grouped into three discipline-related categories: (1) faculty whose decisions were discipline-identified and content-centered and who viewed their roles as transmitting knowledge to students, (2) faculty who were less discipline-identified and who saw themselves as sharing interests and perspectives with colleagues in their fields while promoting student growth, and (3) faculty belonging to either of these groups who also were concerned with skill acquisition, students' career socialization and/or entrance into a professional field (Stark, Lowther, Bentley, & Martens, 1990). Of course faculty members do not espouse only one of these beliefs; the grouping is based on strongest emphasis. We found that faculty in career fields place about equal emphasis on the learning of concepts, the achievement of personal and intellectual development, and career development and socialization.

Although the studies described above were with faculty teaching introductory general education courses, we corroborated many of these notions by examining views on the liberal arts majors formulated by disciplinary groups of faculty for the Association of American Colleges (Lattuca & Stark, 1994). In these content analyses we found that the science task forces articulated curricular coherence in the major based on consensus about strong and clear relationships among concepts, principles, and operations. They accepted the scientific method and were not

inclined to help their students develop critical perspectives about their fields. In light of generally strong consensus about the content and sequence of what should be taught, they did not object to coordination of the curriculum. In contrast, humanities and social science fields, which depend less on tightly related concepts and value differences of opinion, found it difficult or uncomfortable to define coherence. Their goal was to help students compare various perspectives. These low-consensus fields preferred to maintain considerable autonomy and discretion for the instructor.

Based on these studies, I am convinced that the Phenix/ Dressel and Marcus scheme, though not empirically developed, has enduring value for classifying the disciplines. Because it focuses on the educational dimensions (but does not exclude the mode of inquiry and influence of discourse communities), it may have greater potential for undergraduate professional programs than do schemes based on paradigmatic consensus in research.

A Proposed Typology of Professional Fields

The various disciplinary dimensions and descriptions of academic cultures I have discussed still ring true for many fields in today's colleges and universities. But they are not sufficiently inclusive to help us understand the orientations of current faculty and the academic programs which include those teaching in collegiate career fields. It would be inappropriate for me to make this assertion without suggesting an alternative approach. Thus, I propose a new scheme for consideration. The framework I present will need empirical testing, but whatever the outcome, it will bring to the attention of scholars the need to develop an appropriate classification system.⁷

The Proposed Framework

The framework has five dimensions, which I display in Table 1, outline briefly, and then develop further. In Table 1, as well as in the preceding and subsequent discussion, I have ordered the five dimensions as I currently estimate their importance in distinguishing collegiate career fields. I have also included the comparable Phenix-Dressel/Marcus categories in Table 1 and in parentheses in the text to show how the new scheme parallels the model on which it is built. I will describe each of these dimensions more completely below prior to presenting a hypothesized classification for several fields.

Briefly, the first and potentially most important dimension categorizes the fields based on the role their graduates play in society. Each field has

a service arena in society and thus a related set of concepts, technical skills, and contextual considerations to be taught. The second dimension is based on the nature of the linkages the field maintains with its professional practitioner community and foundation disciplines. For collegiate career fields, the community of scholars extends outward from the collegiate setting to encompass practitioners who are using the knowledge base in many settings and who often help to prepare new practitioners. This expanded colleague network sometimes leads to strong influence from outside academe and ensures responsiveness of the curriculum to societal needs. It leads faculty in these fields to be concerned with issues that are not characteristically the concerns of their disciplinary colleagues. Third, each field communicates values to neophytes in the field. Both the amount of emphasis placed on values and the specific values that are emphasized differ among the collegiate career fields. Fourth, each field has methods of inquiry. Because collegiate career fields typically draw from more than one foundation discipline, the methods are often better characterized as "planned eclecticism" than as paradigm consensus. Fifth, the collegiate career fields have symbol systems, some of which are open to nonexperts and some of which are closed. Some symbols are shared with other disciplines in which they have their roots or other fields with which they collaborate.

Service or technical role [substantive structure]. This dimension defines the collegiate career field in terms of the problems and issues with which it deals and, specifically, its type of "service" to society. The service role dictates the conceptual foundations or knowledge base that professionals must acquire and the kinds of technical skills that society expects practitioners to use when solving problems defined as within the field's domain. This dimension parallels the concept of interests, substance, or content for the disciplines, but the knowledge base may be drawn from more than one discipline. Societal values and needs determine what is central for some of the service areas, while others have more autonomy.

In all professional programs the faculty are concerned with conceptual competence, technical competence, and contextual competence (Stark, Lowther, Hagerty, & Orcyzk, 1986). Acquiring these competencies means that students have learned the knowledge base of the profession, the basic technical skills needed to practice, and the context in which practice takes place. Of course, these three competences are related to the type of service the profession provides; thus, each field exhibits different competences. When we talk about the "nature of the problems" that each field deals with (and inquires about), we include the client orientation and the type of expertise necessary to solve the prob-

TABLE 1
Components of Disciplines and Professional Fields

Professional Fields*	Disciplines**
<i>Service or technical role:</i> The problems with which the field deals and, specifically, its type of "service" to society. What are the technical and conceptual competencies professionals must acquire to perform their role in society? <i>Connections and linkages:</i> The linkages with foundational disciplines, with the practice community, and with other professional fields. How are conceptual and technical competencies integrated for practice? <i>Values:</i> The attitudes the field has about its service role, its clients, and the improvement of the professional field itself. What services are worth providing and what orientation must the professional bring to the role? <i>Methods of inquiry:</i> The methods used to answer questions or solve problems. What are the ways in which the field creates its own unique methods and draws upon the inquiry methods of its foundational fields in developing its knowledge base? <i>Symbolic and discourse communities:</i> Technical and nontechnical symbol system. What symbol systems does the field use in communicating internally and with clients and the public about its role in society?	<i>Substantive structure:</i> Assumptions about the particular concepts of interest that control the questions asked and the inquiries undertaken. What are the types of problems with which the discipline deals? <i>Organizational structure:</i> The set of principles relating a discipline to other disciplines. (Also called conjunctive structure.) <i>Value structure:</i> A set of embedded values, orientations, or ways of viewing the world. What is worth studying and how should it be studied? <i>Syntactical structure:</i> A system for collecting and organizing data, posing and testing hypotheses or assertions, and relating justified assertions to the broader generalizations and exploratory schemes of the discipline. What are the ways in which evidence is collected, organized, evaluated, and interpreted? <i>Symbolic structure:</i> A symbolic communication system (frequently linguistic or mathematical but sometimes nondiscursive). What is the symbol system that allows the expression of and communication about the unique aspects and relationships?

*See Stark & Lattuca, 1997, pp. 148–150.

** See Dressel & Marcus, 1982, pp. 89–90, 108–133.

lems. In another sense, each field works with different types of raw materials; the professional is a performer who learns the expertise needed to solve problems related to this raw material. Thus, the profession shapes the educational program and the program shapes the profession.

Connections and linkages [organizational/conjunctive structure]. This dimension describes two key linkages typical of collegiate career fields. First, the preparation program has linkages with fields that teach the conceptual foundation professionals must acquire. The linkage system may be extensive if it includes links with several parent disciplines. The roots of a collegiate career field may be in sciences, social sciences or

humanities, or in combinations of these. The second key linkage, with the external community of practitioners, may be well developed or poorly developed. Where the link is well developed, professional community influences affect professional certification requirements, accreditation standards, codes of professional ethics, and provisions of integrative opportunities for students. Integration of theory and practice may be achieved by (1) a master-apprentice relationship, (2) a closely supervised clinical experience, (3) a loosely supervised internship, (4) a planned externship, or (5) no planned or supervised experience. Clearly, the more closely supervised experiences require greater collaboration between educators and practitioners. Some fields have accrediting by professional associations with no or little practitioner involvement (law, medicine, business); others have inclusive joint councils of academicians and practitioners (architecture, engineering, nursing, accounting, social work, education). Possibly the fields where students can be employed in very diverse settings are less likely to have tight involvement with practitioners.⁸

Values [values structure]. The specific values espoused by a collegiate career field shape its attitudes about its service relationship to society or clients, ethical problems, and the improvement of the profession itself. We have called these values "professional attitudes," including professional identity, professional ethics, motivation to continue learning, and scholarly concern for professional improvement (Stark, Lowther, & Hagerty, 1986a). Some fields have a consensus or collective judgment about how new members of the community should be socialized to accept these values; others have no consensus. The value component and the service role are related, as is true for the value and substantive components for traditional academic disciplines in the Phenix scheme.

Methods of inquiry [syntactical structure]. This dimension encompasses the methods used to answer questions or solve problems. The methods of inquiry used by the collegiate career fields are often eclectic; they are distinguished by use of multiple methods, drawn and adapted from other disciplines and professional fields. The range of questions to be addressed in a field depends upon the diversity of settings to be studied and the structure of the foundation disciplines; the broader the field and the "softer" the foundation disciplines, the greater the diversity of methods of inquiry needed.

Symbolic and discourse communities [symbolic structure]. All college programs are concerned with helping students develop standard communication competence in reading, writing, and speaking. Many collegiate career fields also emphasize both interpersonal skills necessary for client relations and technical language for communication with other re-

lated professions. The symbolic system specific to a collegiate career field may be closed, that is, intended only for those with specialized education. Or, it may be open to interpretation by laypersons with modest education. Whether a symbolic system is closed or open is associated with both the type of service and the extensiveness of the field's connections and linkages.

In short, I believe that collegiate career fields are characterized by the extent to which they emphasize the five components above in their educational plans.

The Classification

Studies my colleagues and I have conducted lead me to suggest that the service role is the primary distinguishing factor among the collegiate career fields. I hypothesize that among the common career fields at least four different substantive service roles may be found: human client service (characterized by nursing, social work), information service (library science, journalism), enterprise/production service (business, engineering), and artistic service (music, art, theater). Some fields may be hybrids that perform more than one type of service role and do not fit so neatly into categories: for example, education provides both client and information service; pharmacy is concerned with both client and enterprise service, and architecture may involve both enterprise and artistic service. So of course, like most typologies, this one is more accurately a continuum.

Beyond the service dimension, which is key, I believe the fields may also be classified on the strength of their connections and linkages, especially with the practice community and the foundation disciplines. Thirdly, they may be distinguished on the value dimensions. The extent to which the faculty agree on and emphasize student socialization, we have found, clearly divides the professional fields into two groups. Some fields, particularly nursing and social work, strongly emphasize the development of professional identity and ethics among students. In contrast, other fields, such as engineering and business, not only fail to stress these aspects of professional education, but may not even agree on what ethical standards exist (Stark, Lowther, & Hagerty, 1987.) A third group of professional fields, such as journalism and architecture, are ambivalent or divided about devoting attention to socialization into the profession, or they leave the task to others. The ambivalent fields tend to belong to more than one service sector (for example, they provide two types of service roles simultaneously) and frequently debate their relations both to society and to practice communities and settings.

These three key dimensions, *service role, connections, and values*,

potentially capture the primary characteristics of professional fields, the knowledge base, the value base, and the experience base (Klingstedt, Descamps, & Schroeder-Donofrio, 1981). In addition, I propose the fields may be further distinguished based on methods of inquiry and symbolic systems, but I have a less developed sense of how important these two features may be in differentiating the fields after the first three have been considered. In general, there is less consensus on inquiry paradigms when the professional field is based in "soft" parent disciplines, as is true for education and social work, whose root disciplines are typically sociology and psychology. There is greater consensus in engineering, paralleling its root fields of mathematics, physics, and chemistry. In journalism, which is ambivalent about whether it is a professional field or one of the arts and sciences, faculty report no identifiable research paradigm that characterizes the field. Considering the variation in linkages with foundation fields, it is possible that variance in inquiry methods is accounted for by the service role and connections with foundation disciplines, and a consideration of their inquiry methods will not differentiate the professional fields further. Use of symbolic discourse as a distinguishing factor is even more speculative, once the prior four dimensions are considered. These dimensions remain to be explored further. In the interim, I turn to a hypothetical classification of some familiar collegiate career fields.

Four hypothetical clusters of collegiate career fields are illustrated in Table 2 with some suggestive information about their characteristics. The evidence for each cluster will be discussed briefly below. The data sources that led to this hypothesized scheme include: (1) a survey of educators in numerous collegiate career fields about their educational purposes, connections, and values (Stark, Lowther, & Hagerty, 1987); (2) an extensive synthesis of literature in the journals of the collegiate career fields (Stark, Lowther, & Hagerty, 1986a); (3) interviews with 115 professional faculty members about educational activities they use to achieve desired outcomes; (4) study of accrediting standards and college catalogs (Hagerty & Stark, 1989); (5) broad reading about the professional education programs; and (6) various consulting projects. For each hypothetical group of fields I describe the service role, connections, values, inquiry methods, and symbol systems as my colleagues and I have encountered them.

The Human Client Fields

Service role. Those engaged in the client services are generally thought of as altruistic. The raw material they work with is human lives and the knowledge base is about humans. The emphasis is on working

TABLE 2
A Typology of Professional Education Programs

Service and Technical Roles	Connections and Linkages	Values for Professionals	Inquiry Methods	Symbol System
Human Client Examples: Nursing Social Work Pharmacy??	Supervised practice in limited settings. Sciences and social sciences Limited work settings Strong public control	High ethical emphasis Strong professional identity. Commitment	Eclectic Empirical	Technical (closed) Interpersonal (open)
Information Examples: Education Library Science Journalism	Loosely supervised practice in limited settings Social Sciences Some public control	Moderate ethical emphasis Moderate strength professional identity Varies by field	Eclectic Empirical and experiential	Eclectic Nontechnical (open) Technical (open)
Enterprise/Production Examples: Business Engineering Architecture??	Field specific loosely supervised practice settings Sciences, Social sciences Eclectic work settings Limited public control	Low ethical emphasis Weak professional identity	Pragmatic	Mixed Graphic modeling
Artistic Examples: Music Art Drama Dance	Tutorial practice Humanities Loose and broad work settings No public control	Low ethical emphasis Individualized master/apprentice socialization	Experiential Peer review Aesthetic/creative	Art forms (closed) Interpretation (open)

with clients, providing both care and problem solving with respect to those who need assistance, and on commitment to the alleviation of pain, suffering, poverty, and oppression.

The conceptual and technical skills required of professionals in the human services fields are clearly prescribed and are often rigorously demanded of graduates, both by their professors and by society. Competence in the health services, for example, is controlled by external licensing to assure society that the professionals are competent. The types of settings in which human service professionals are employed are fairly restricted. Social workers and nurses, for example, can work in private firms and corporations as well as in hospitals, schools, nursing homes and state agencies, but within these settings the role played is similar. Other fields that may belong to this human client services group are the various therapies (art, music, occupational, and physical), dietetics, and pharmacy, which in recent years has been moving from a product orientation to a patient orientation.

Connections and linkages. Variations in practice settings and in regulation of technical competence also lead to different types of linkages with the practice field. The distinguishing factor may be either that these connections are strong or weak, or close or distant. In general, human client services typically have close relationships with members of the practice community, who help to provide clinical experiences for students as they develop "integrative competence"—the ability to meld concepts and skills in practice (Stark, Lowther, & Hagerty, 1987). The close relationship requires considerable consensus about the focus and outcomes of student experiences. These fields also have close links, because they center on a single focus of their efforts, the client or patient, and because they relate to external groups, such as state legislatures, that are responsible for health care funding and licensing. Often the practitioners and educators in these fields will relate jointly to external government agencies through common professional organizations.

Because the human client fields are so carefully regulated to assure competence, they also have close relationships with the foundation disciplines in the sciences and social sciences. Frequently, students from these fields are segregated into special sections of foundation classes to ensure that relevant material is covered.

Values. Consistently, we have found that fields performing human client services tend to consciously socialize students to prepare them for client interaction. This includes attention to appropriate service attitudes and professional identity, that is, "gaining a sense of their place in the fabric of society and their obligations as learned professionals" (Stark, Lowther, & Hagerty, 1986b). Just as the idea of paradigm consensus in

research enables a sense of "connectedness" in the field, perhaps the shared sense of responsibility to socialize students provides connectedness for human client fields. Nursing and social work have codes of ethics that are strongly emphasized during student training and are to be transmitted to students through role modeling.⁹ Thus, the values component is not independent of the tight connection with the practitioner community. A related value is the emphasis placed by the professional field on "contextual competence." This term refers to the extent to which the field values the student's understanding of the social, economic, and political context in which the profession is practiced. In general, the stronger the value orientation, the stronger the emphasis placed on providing students with a contextual orientation to practice in society. Furthermore, the educational program typically includes capstone courses for advanced students that deal with policy issues relating the field to society.

Inquiry methods. In general, we have found that human client fields spend more time teaching and less in research than is the case for some other fields. Faculty inquiry in these fields generally focuses on improving professional practice or adapting to changing contexts in society rather than on purely theoretical questions. Adaptation is often a matter of responding to social trends and concerns such as child abuse, AIDS, environmental hazards, health care funding, and changed societal economics. Similarly, inquiry may focus on adapting to new discoveries in the foundation disciplines, such as learning to deal with new medicines and medical equipment. Thus, the mode of inquiry may be based in the social sciences or the biological sciences but is likely to be targeted at improving professional interventions.

Symbolic system. Interpersonal skills are important in work with human clients and provide an open symbolic system for communicating with those outside the professional field. Strong emphasis is placed on interviewing, listening, consulting, and helping others to help themselves. At the same time, a separate set of symbols is needed to communicate with other professionals in the group. Thus, human client professionals also have a closed technical language that they use to communicate with each other—as in reading/writing a medical prescription or recording health information on a chart. Such a closed system may serve to safeguard the public by protecting confidentiality and by reserving professional practice to those who have been duly trained and admitted.

Summary. The human client fields are altruistic, regulated by the public, and practiced in limited settings. They have strong connections with both practitioners and foundation disciplines and place strong emphasis

on students' socialization in professional norms and values. The mode of inquiry is practical and eclectic, and the symbol system is open and closed for different audiences.¹⁰

The Information Fields

Service role. The information fields serve society by organizing information to make it available to others (library science and education) and by communicating directly with varied public audiences (education and journalism). The raw material or knowledge base they work with is data or information, but there is considerable interaction with human clients. All the fields emphasize not only the types of information to be conveyed but appropriate methods of conveying it.

Because journalists "cover society," they are necessarily interested in questions of social structure, legal framework, economics, and political structures. These form the questions of the discipline about which they inform the public. Consequently, there are disputes about whether journalism is a collegiate career field, because the best route to the needed conceptual competence may be a broad education directed at understanding society. Even within this broad focus, there are two groups—the humanistic journalists and the social science journalists—who differ in their approaches to determining the important questions. In addition, there are diverse specialties in journalism that require specific technical competence, including advertising, public relations, sales, marketing, print media, commercial TV, to name a few. Thus, though the service arena of journalism is clear, the type of service, the types of issues, and the types of training are not homogeneous, and the field lacks consensus.

Education also deals with issues of how to organize and transmit information but with the general goal of sustaining the cultural heritage of society and equipping the next generation with knowledge and skills. Thus, as in journalism, all of the questions and problems of society are also the questions and problems of education. In education as well, there is dissension about goals and issues. For example, some education professionals believe that the cultural heritage needs to be rethought and redirected rather than transmitted and sustained. Finally, education is similar to journalism, because there is public debate about the efficacy of specific preparation for education careers; some believe that broad studies are crucial and that there is little value in study to achieve pedagogical competence.

Library science is also subject to rapid change because of changing views of society and, especially, changing technological means for obtaining information. The questions with which it deals have not changed,

but the technical competence of the field is shifting rapidly with the changing context.

Connections and linkages. Education, library science, and journalism have quite different types of connections and linkages. In education, required internships in teaching cause college faculty and teaching practitioners to work together, if sometimes uneasily. Similar arrangements characterize library science; however, in our studies, library science faculty perceived relatively little influence from their external professional community. Both of these fields have a relatively narrow group of employment settings new professionals can enter, thus the relationships with practitioners in these settings is clear, if not close. In contrast, journalism is a field with multiple work settings and no cohesive external reference group. Journalism students who gain experience in the field are often unsupervised, finding their own placements in settings external to the university or gaining experience in campus media. Given the relatively strong influence each field has on society, it is interesting that education requires a state license; journalism does not.

With regard to the foundation disciplines, students in education, journalism, and library science have a wide range of possibilities for study in many liberal arts fields. Other than psychology and sociology, which are typical requirements for education, there is not a firm and consistent disciplinary foundation undergirding these fields.

Values. The values espoused by the information fields relate to the accuracy and effective transmittal of information as well as to the effect of the information on society. Value orientation may be weak, reflecting the dissension about the service role as well as multiple views about the ultimate goal of information. For library science and education, professional socialization takes place during the field placement. It is considered important but not as critical as in the human client fields; some professionals can enter careers without the practice experience. The information fields cultivate professional identity during the preparation program but give ethics limited attention. In lieu of planned internships, most journalism programs emphasize guest lectures and seminars with prominent practitioners and alumni to socialize students to the field or allow students to practice with relative autonomy in campus media.

Inquiry methods. Faculty members in the collegiate career fields I tentatively classified as information service spend far more time in teaching than in research. Faculty members in education and journalism tend not to see themselves as scholars, but those in library science do view themselves as such, at least in the sense of their broad engagement with information from many fields. In these fields where the emphasis is on

pragmatic questions about how to transmit information, the questions of interest are more often "what seems to work and how can it be improved" than "why does it work." Inquiry methods vary widely for different specialties within each field and may be drawn from humanities and social sciences, including psychology. Increasingly, the information fields may draw from the sciences as the technological age intensifies.

Symbolic system. In keeping with the services the information fields provide, the symbol systems they use are almost entirely open. Considerable attention is devoted to communicating clearly with nonexperts. The technical symbol systems that exist are reasonably accessible to others. This accessibility is related to less closely held requirements for career entrance than in the human service field.

Summary. The information fields are oriented both toward people and data. Some are practiced in specific settings; others in diverse settings. They may lack strong consensus about roles and values, and the connections with foundation disciplines are generally loose. Connections with practice settings are modestly strong, as is emphasis on student socialization into the profession. The modes of inquiry used are practical and eclectic, frequently drawing from the social sciences and humanities. The symbol systems are generally open to the public. Notably, the information fields may not be readily distinguished from other groups by strong emphasis on any of the dimensions of the proposed classification scheme beyond the service role.

The Enterprising Fields

Service role. The role of enterprising fields such as business, engineering, and, arguably, architecture, is to produce commodities or structures for society's use. The raw materials they work with are products, materials, and money. To the extent that commodities enhance human life quality or solve social problems, these fields may be considered altruistic. However, in general, their key questions concern how to produce profits for entrepreneurs or to maintain functional and financially solvent public services.

Engineering is a practical art, grounded in scientific theories and primarily concerned with solving problems. Both professors and students in engineering programs characterize themselves as being unconcerned with social trends; rather they concentrate on the scientific aspects of problems. Architecture is also a practical art, but one grounded in history and creative problem solving. Architects often characterize themselves as problem solvers who are interested in the environment and the human condition. While focusing on designing a solution to a functional

problem, architects are concerned with space for human habitation and how it has evolved culturally and technically over time.

Business and engineering, especially, are composite fields, rather than single applied disciplines. Business includes accounting, marketing, management, organizational behavior, management information systems, operations research, and finance. Engineers may deal with problems that are electrical, mechanical, civil, chemical, industrial, nuclear, or aeronautical, to name a few. Architects may work with design problems that are primarily aesthetic or primarily functional and concerned with profit making.

Connections and linkages. Connections and linkages with practitioners are complex in business and engineering because a single focus is lacking; each of the varied specializations constitutes an educational community that links with its own practice community. Furthermore, in business and engineering one may assume a professional role in many diverse work settings without even having studied in the field. Only a few professionals in these fields need a license, notably, certified public accountants and professional engineers who are engaged in developing public structures. In contrast, architects are not licensed until after spending about three years of work in an office to integrate theory and practice. Architecture graduates also enter varied settings, not only in private practice, where the client is important, but also in government, for example on planning commissions and code enforcement offices. Under these situations of varied prerequisites, settings, and time frames, it is difficult to develop a tight relationship with practitioner communities. Business and engineering tend to provide contact with practitioners for students through advisory committees, guest lecturers from corporate settings, and other ad hoc activities.

In business, the foundation disciplines are loosely prescribed, except for economics and related quantitative studies. In contrast, engineering builds on a strong prescribed base in science and mathematics and is, therefore, a hierarchical field like the parent disciplines. Architecture calls upon more eclectic foundations, ranging from the humanities to the sciences. In fact, some architectural educators view their programs as a last bastion of liberal education, because in solving problems they reference society, technology, morality, and philosophy.

Values. In our studies of course planning, we found that business instructors characterized their field both as an organized body of knowledge and a set of skills. Because they were interested in the career development of students, instructors teaching business administration courses drew heavily on work experience and employer needs outside

academe in deciding what students should learn. Yet relatively few programs in business require supervised internships; rather, students are encouraged to obtain externships and gain experience on their own. Business departments teach many ethics courses, but faculty admit that the field is still trying to identify ethical conflicts with which they should deal.

Engineering socializes students into the profession by cultivating habits of systematically solving problems and of finding creative solutions. Architecture values creative solutions as well but embeds creativity in historical and sociological context. Architecture professors socialize students to be sensitive to the relationship of man-made structures to the environment. The idea of individual student development of creativity through the mentoring and role modeling is propagated through a tutorial studio approach. Practitioners are involved in critiques of students' products in the design studio. Such relationships involving creative endeavors are more individualized than the formally structured clinical experiences in fields such as nursing, social work, and education. But architecture faculty claim not to formally stress professional behavior during the undergraduate years; rather the professional norms are assumed to be internalized during the postgraduation internship period before licensing.

Inquiry methods. In these fields that are oriented toward problem solving, useful research is often defined as new solutions to real world problems. Thus, business professors read practical periodicals, such as *The Wall Street Journal* and *Fortune*, and follow trends as portrayed in *Time* and *Newsweek*. Business practitioners often criticize research that is done by faculty in the educational settings as too theoretical and not accessible to practitioners. According to deans of architecture with whom we have talked, the word "research" does not quite fit a field where creativity is used to solve design problems. The distinction between research and problem solving is somewhat blurred in engineering as well. The difference between engineering fields and their parent scientific disciplines is in the degree of abstraction of the problems that are deemed appropriate for study. Thus, inquiry in the enterprising group may respond to societal trends, market-driven factors, environmental issues, and technological change that merit new approaches, rather than to the search for new theoretical knowledge. The methods of inquiry will likely follow the foundation disciplines or be unique to the applied field.

Symbolic system. All of these fields serve paying clients, therefore all emphasize clear communication skills to work with clients. Because entrance to the field is not degree dependent, business (with the possible

exception of accounting) has an open symbolic system. Engineering shares much of its symbol system with the foundation sciences of physics, mathematics, and chemistry. Architecture has a nondiscursive symbol system consisting of graphics and models that is not easily accessible to nonexperts. Like engineers, architects are often more comfortable communicating in non-verbal ways.

Summary. The enterprising fields are diverse within themselves and are concerned with production for society. They have strong connections with structured disciplines such as science and mathematics on which they build. However, because each program within these fields builds on slightly different foundation disciplines, perhaps business and engineering each comprise several distinct groups (as is also true when they are grouped by the Biglan classification). Because of the diversity, relations with practice settings for educational purposes are typically weak, and public regulation is limited. Student socialization is not highly valued, at least in the sense of gaining a sense of professional identity, and there is very limited emphasis on ethics. Rather, valued socialization may be in modes of thinking, problem solving, and creating. Inquiry methods and methods used for problem solving are not easily separable. Symbol systems tend to be more closed than open.

The Artistic Fields

Service role. The artistic professions serve society by helping to interpret the world in creative ways to human audiences and by providing entertainment. The knowledge bases they work with are abstract expressions and nondiscursive communication systems. The arts evolve with culture and reflect the emerging culture to its members.

Connections and linkages. One needs no college degree to become an artist, dancer, or musician. A performing artist of any type may exhibit her craft in an established theater or on a street corner and needs no license to appear in either place. Thus, connections between the professional program and the practitioner field may be informal, such as visits from star performers or former students. The practitioner community is diffuse and coupled only loosely to the preparation programs in universities.

Values. Education and training in the arts heavily emphasize attitudes such as self-discipline and dedication to the field. Dance, art, and music often are viewed as crafts, and students in formal creative arts programs may be "apprenticed" to a master teacher who provides a role model. Subsequently, students present a recital, exhibit, or other demonstration of their progress subject to peer and expert review. The relationship between teacher and student in the apprentice setting is more flexible, be-

cause it may not involve an established segment of the practice community as is true in clinical settings. In a study of several fields, Killenbeck (1995) found no attention to ethics in the artistic professions. In fact, most artistic fields believe that artistic expression should be unfettered by moral codes.

Inquiry methods. In the artistic fields, creativity and inquiry are not distinct from one another. Creative adaptation in the artistic fields reflects new ways of interpreting the world or of interpreting trends in society. Judgments about the excellence of creative products are subject to both peer and public review.

Symbolic system. The arts have a "physical vocabulary" for communication rather than, or in addition to, a verbal one. The symbolic systems are both open and closed to the lay public. Although nonperformers may receive the messages from the symbols, they are typically not equipped to use the symbol systems of art, music, and dance to convey their own messages as professionals do.

Summary. The artistic professions were not included in any of our studies, and it appears that most other comparative researchers have omitted them as well. Therefore, much remains to be learned about how these proposed classifying dimensions operate in fields such as art, music, and dance performance.

Implications for Higher Education Research and Next Steps

The typology just described is grounded in immersion in the literature of undergraduate professional fields and in experiences studying them. But more definitive empirical verification of the scheme is needed to make it useful. The first step is to develop measures that cluster collegiate career programs in terms of the dimensions that affect their educational programs and student socialization processes, using inquiry methods for faculty research as only one of the criteria rather than as the essential one. To validate, it would be possible to repeat the multidimensional scaling procedure used by Biglan by constructing bipolar pairs that tap the dimensions of the proposed classification framework for collegiate career fields. Or, Likert-type survey items could be constructed to tap each dimension of the framework and the data used to cluster numerous collegiate career fields based on faculty views. Cluster analysis, which likely was not available to Biglan in the early 1970s, makes such a technique feasible. Alternatively, the collegiate career fields could be tentatively grouped in the way I have suggested here and survey data used to identify the key differentiating variables through discriminant analysis, as several researchers have done with the Biglan scheme. Each

of these research approaches could reveal the correctness of my speculation about the relative importance of the five dimensions of the classification, could suggest additional dimensions to replace weak discriminators, and could refine the hypothetical groups. Of course, it is important to recognize that one seldom finds pure types in a typology; a continuum is more likely than a rigid set of groups. Furthermore, considerable variance is likely to remain within any group of collegiate career fields even when they are empirically clustered based on similar characteristics.

To summarize, an appropriate classification scheme for the collegiate career fields could improve all types of research: descriptive, predictive, explanatory, and improvement-oriented. In the same way that the Biglan classification has served researchers well, this typology, if validated, can provide either independent or mediating variables depending upon the research question. In the descriptive arena, the four (or more!) different types of collegiate career fields may be expected to differ in such characteristics as faculty/student ratio, concern for student socialization, types of research that faculty do, types of publications considered influential, rate of student progress toward degree, and need for specific types of educational budgets.

In correlational or predictive research, the group classifications used as mediating variables can help to refine causal models that predict such dependent variables as student progress rates, faculty time allocation, relation of student outcomes to entering characteristics, effectiveness of instructional processes, and student ethical development.

In explanatory research, researchers can pursue case studies or other qualitative methods to understand in depth a specific group of collegiate career fields by restricting their sample to groups with common characteristics or by stratifying their selection to include known variations.

Finally, in improvement-oriented research, interventions, ranging from faculty development to modifications in institutional culture, can be designed to take account of the specific characteristics of the educational program, rather than expect all programs to fit the same mold.

My research has led me over the years from comparing issues and missions across programs to a more basic consideration of the fields themselves and how they operate in preparing new professionals for their various service sectors. I have also moved from a focus on the differences among fields to envisioning them in groups with some similar characteristics. Professional preparation fields have substantive questions, norms, values, and linkages that are as obvious as are those in the traditional academic disciplines. In some cases these dimensions take the form of ideologies which are shared clusters of beliefs that bind the field together and shape its relations in its external and internal context.

These ideologies exert powerful influences within specific academic programs and within the university. Higher education researchers cannot continue to ignore them.

Notes

¹According to sociologists, professions have (1) a body of knowledge, (2) a degree of autonomy in practice, (3) a service ethic, (4) procedures to admit new members, and (5) self-regulatory power.

²The U.S. Office of Education calls many (but not all) such graduate level programs "first professional degrees."

³It clearly is marred by the fact that an undergraduate career study offered at one college may be offered only at the graduate level in another college.

⁴Interestingly, Smart and Elton (1982) used questions regarding the emphasis each faculty member placed on 16 undergraduate teaching goals and found the applied/pure dimension to be the strongest discriminator. They also found that faculty indicators of interest in intellectual and character development of undergraduate students appeared on the function separating applied and pure dimensions.

⁵I have rearranged the order of the presentation from Dressel and Marcus to serve the discussion to follow in my argument.

⁶Another classification includes the synnoetic disciplines, concerned with subjective, even paranatural, ideas.

⁷Braxton and Hargens (1996) mention articles by Storer (1967, 1972) that suggested the idea of differences on Kuhnian dimensions somewhat earlier than Biglan's work. The articles received little attention until Biglan tried to make the idea operational.

⁸A third linkage dimension is with other professions in the same service domain who collaborate to solve similar types of problems. This characterizes relations between nursing and pharmacy, for example, or between architecture and engineering. I will not consider this third linkage further, because it appears not to be an important force in shaping collegiate career fields.

⁹Feen-Calligan (1996) found art therapy to be a profession similar to social work in many respects. Speaking of human client service, she said, "A critical aspect of the stabilization of a profession is the education of new professionals" (p. 11).

¹⁰Arguably, pharmacy can be included in this group. In pharmacy the emphasis is on the client, skills and techniques are emphasized, and internships and ethics are important in the student socialization process. Pharmacy has state license and continuing education requirements. Yet the settings in which pharmacists often work could place them as well among the enterprising fields.

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Student Participation and Instructor Gender in the Mixed-Age College Classroom

In 1991 over 38% of all U.S. college students, and nearly 42% of female U.S. college students, were age 25 or older. According to projections, by 1998 the number of nontraditional (age 25 or older) U.S. college students will rise to almost 46% (U.S. Bureau of the Census, 1995, p. 178–179). The Education Resources Institute (1996) reported that the percentage of college students age 40 or over grew from 5.5% of the total enrollment in 1970 to 11.2% in 1993, making this group the fastest-growing age category during that period. Clearly, nontraditional students will continue to be an increasingly significant part of the college classroom.

Despite their significance, nontraditional college students have been largely ignored in investigations of classroom discussion. Much of the debate has centered around the issue of student gender in the college classroom with little consideration to the impact of student age on classroom participation. The Education Resources Institute (1996) report described the typical 40 and over student as a white female who attends a community college part-time and works thirty or more hours per week. Thus, as Howard, Short, and Clark (1996) suggested, due to their different life experiences, nontraditional students' definition of the situation in the college classroom is likely to differ considerably from that of traditional students. These differences contribute to the greater willingness of nontraditional students to participate in classroom discussion.

Because Howard, Short, and Clark's (1996) sample of 13 introductory level courses were taught almost exclusively (12 of 13 courses) by fe-

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male instructors, it was not possible to consider the effect of instructor gender or course level in the mixed-age classroom. This study seeks to fill that void in the literature and contribute to the ongoing debate regarding the impact of student age, student gender, instructor gender, and course level on student participation.

Previous Research

Since Hall and Sandler's (1982) contention that the college classroom presents a "chilly climate" for female student participation, the issue of student gender has been the object of considerable study with ambiguous results. Several studies found no effect of student gender (Boersma, Gay, Jones, Morrison, & Remick, 1981; Cornelius, Gray, & Constantinople, 1990; Crawford & MacLeod, 1990 [in their university sample]; Hamlin & Janssen, 1981). However, other studies have concluded that males participate disproportionately (Brooks, 1982; Constantinople, Cornelius, & Gray, 1988; Crawford & MacLeod, 1990 [in their small college sample]; Fassinger, 1995; French, 1984; Graddol & Swann, 1989; Karp & Yoels, 1976; Pearson & West, 1991; Spender, 1981). Brooks (1982) linked males' greater levels of participation with instructor gender, suggesting that males participate more than females in female-taught classes. On the other hand, Sternglanz and Lyberger-Ficek (1977) and Pearson and West (1991) concluded that male students are more likely to dominate discussion in male-taught classes. Auster and MacRone (1994) found that instructor gender was not a significant determinant of student participation. Fassinger (1995) concluded that although instructor gender had no effect on the participation of male students, female students were more likely to participate in classes taught by female instructors.

Class size was found to be a significant determinant of participation in classroom discussion in several studies (Constantinople, Cornelius, & Gray, 1988; Crawford & MacLeod, 1990; Fassinger, 1995; Howard, Short, & Clark, 1996). Fassinger (1995) emphasized the role of student traits (e.g., confidence, comprehension, interest, and preparation) and class traits (size, emotional climate, interaction norms, frequent large group discussions) over instructor traits (e.g., gender). Nunn (1996) challenged Fassinger's (1995) findings by concluding that the instructor's choice of teaching techniques (e.g., teacher using praise, posing questions, asking for elaboration, using student names) significantly impacted the level of discussion. Several studies have found that the overall level of participation is greater in classes taught by females (Auster & MacRone, 1994; Cornelius, Gray, & Constantinople, 1990; Pearson & West, 1991; Statham, Richardson, & Cook, 1991). Sternglanz and Ly-

berger-Ficek (1977) found the opposite—that participation was greater in male-taught classes. Of the above studies, only Howard, Short, and Clark (1996) attempted to examine student age in relationship to participation in the college classroom.

Methodology

Utilizing a single method to investigate interaction in the college classroom presents limitations. While surveys are often the most efficient method of obtaining the data, Karp and Yoels (1976) demonstrated that what students say in surveys and how they actually behave in the classroom can be two very different things. Surveys are especially prone to find no effect of instructor gender, whereas observational research has on occasion (e.g., Karp & Yoels, 1976) demonstrated just such an effect. Observation can provide some clear evidence of what actually occurs but may not provide an interpretive understanding of the participants' views of the setting and of one another.

With those limitations in mind, this study utilized a triangulation of research methods: nonparticipant observation, survey, and interviews. The research was conducted during the fall 1995 semester at Indiana University Purdue University Columbus (IUPUC). Student enrollment in the fall of 1995 was 1836. IUPUC is a commuter campus with a large percentage (52% by head count and 37% by credit hour) of nontraditional students (age 25 or over) and a high percentage (61% by head count and 70% by credit hour) of female students. Student enrollment at IUPUC, given its relatively open admissions policy as an extension campus of a state university, also includes a large percentage (18%) of students who are officially designated as "underprepared" for college level work. Therefore, findings based on this case study may not be generalizable to dissimilar institutions (e.g., highly selective private residential institutions with few nontraditional students or institutions with a male student majority).

Eight students (6 females and 2 males) in the undergraduate course "Social Science Research Methods" were trained in nonparticipant observation techniques. Each student then chose to observe ten sessions of each of two courses for which they were not enrolled. Courses for observation were selected to fit the student observers' schedules, resulting in a nonrandom sample of courses.¹ Permission to observe each course was obtained in writing from the course instructor prior to the start of observations. Instructors were provided with an announcement to read to the class briefly identifying the student observer and his or her role in the classroom. Eleven instructors read the announcement to the class, however five did not.

The sample of courses proved to be representative of the student enrollment at IUPUC with regard to student age. Nontraditional students (those age 25 or older) accounted for 37% of enrollment by credit hour in the fall 1995 semester, nontraditional students were 37% of those observed as well. However, survey data revealed that 45% of our sample were nontraditional students. We suggest two factors to account for this discrepancy. First, we believe the observers had a tendency to label "younger" nontraditional students as being "traditional." This error could lead us to underestimate the differences between traditional and nontraditional. Thus any significant differences between traditional and nontraditional students found via observation should be particularly robust. Second, based on classroom observations we believe nontraditional students were more likely to attend class and, therefore, be observed and counted than were traditional students. With regard to student gender, our sample included a higher percentage of females than did the overall enrollment. Females accounted for nearly 70% of enrollment by credit hour, but nearly 79% of the sample observed. This may have been due to a greater tendency on the part of female, as compared to male, students to attend class. Nonetheless, the presence of such a high percentage of females in the sample may dilute any effects of a "chilly climate" for female students.

All observed courses had a three-credit-hour "lecture" component.² Of these courses, six were 100 level, four were 200 level, four were 300 level, and two were 400 level. Eight were taught by female instructors and eight were taught by male instructors. Six of the observed courses met in the morning (before noon), five met in the afternoon (between noon and 4:30), and five met in the evening (beginning at 4:30 or later). Six courses met twice per week, while ten met once per week. Class meetings of the once-per-week courses were coded as two sessions (one prior to the ten-minute break and one afterwards) making each session approximately 75 minutes in length.

In each observed course the instructor utilized lecture as the primary pedagogical strategy, although these "lectures" were frequently "interactive" with multiple opportunities for students to discuss and ask questions of the instructor. According to course syllabi, only one of the sixteen instructors, a female, made participation in discussion a part of the course grade. In this course, students could earn 22.5 points of "extra credit" (out of a possible total 520 points in the course) through class attendance and active participation. One male instructor's syllabus mentioned, "Attendance and class participation will affect the course grade." However, there was no explanation of, nor provision for, factoring participation into the grade when the "Grading Procedures" were explained

on the syllabus. Four other syllabi (two from male instructors and two from female instructors) encouraged students to be prepared for discussion of the material assigned, but did not make discussion a part of the course grade. The other ten syllabi made no references to "class discussion" or "class participation."

Ten sessions of each course were observed over the 16-week semester. Only "regular" class sessions—those without a film/video or examination as the primary activity—were observed. A total of 156 class sessions were observed.³ Observers recorded each student's verbal contribution to the class using a seating chart. A total of 2711 student observations were made. These students made 4938 interactions which were coded into three categories: 2781 *student initiated* interactions (the student interrupts the instructor to ask a question or to make a comment without invitation to do so); 1743 *instructor initiated* interactions (the instructor invites students' comments and questions); and 414 *direct questions* (the instructor calls on a specific student to answer a question or make a comment). In addition to tracking student interactions via the seating chart, observers also wrote qualitative field notes for each session describing the classroom environment as it pertained to interaction.

The second research methodology employed was a survey of instructors and students in the observed courses.⁴ The survey was designed to discover students' reasons for participation and nonparticipation, students' perceptions of each other and the instructor, and instructors' perceptions of students. The survey incorporated to a significant extent the survey utilized by Howard, Short, and Clark (1996) as well as Karp and Yoels' (1976) list of reasons "Why Students Would Choose Not to Talk in Class." A revised and extended version of the survey was given to the instructors. A total of 242 students completed the survey, which was administered during the 10-12th weeks of the semester.

The final methodology utilized was the interview. Each of the eight observers conducted three interviews with members of the observed courses. Interview schedules were designed to provide specific feedback from some of the most and least "talkative" students in the observed courses. The objective was to "fill the gaps" in the data necessary to explain student levels of verbal participation. Interview subjects were not randomly chosen. Rather, a quota sample was selected to ensure representation of each demographic group. Fifteen students were interviewed along with nine instructors during the 13th and 14th weeks of the semester.

Analysis

Karp and Yoels (1976) suggested that there is a "consolidation of responsibility" regarding student participation in the college classroom.

They found that a small number of students (2 to 5) will account for a majority (50% to 75%) of all interactions. Howard, Short, and Clark (1996) also found the consolidation of responsibility in operation almost 20 years later with 4 to 5 students accounting for 89% of all interactions.

As Table 1 indicates, our analysis affirms these earlier findings. Although the observed courses averaged over 31 interactions per session, over 29 (nearly 92%) were made by roughly five "talkers"—students who contributed twice or more to classroom discussion. A total of 29.3% of all students observed were "talkers." Over half of the students observed did not contribute a single interaction to class discussion in the observed class sessions. Student participation in discussion was the job of these, roughly, 5 students in each class. The issue then becomes who talks (and who doesn't talk) and why?

Table 1 also provides results concerning student participation by demographic category. The results are mixed with regard to the impact of student gender. A greater percentage of females than males participated in class discussion (45.7% to 37.9%). Females also had a higher individual mean total interaction than did males (1.89 to 1.56). We also found that a greater percentage of females were "talkers" (30.4% to 25.5%). At first glance, the data seem to contradict Hall and Sandler's (1982) "chilly climate" hypothesis. This may be due, in part, to the high percentage (78.6%) of the observed students who were female. Although the high percentage of female students is typical of commuter campuses, student demographic patterns at IUPUC in 1995 are quite likely to be significantly different from those found in most colleges and universities in the early 1970s (when Karp and Yoels [1976] conducted their study). They are also likely quite different from residential campuses—particularly at institutions with more selective admissions requirements.

Similar to Howard, Short, and Clark (1996) when we examined the effect of age on student participation, we found that nontraditional students (25 years of age or older) were considerably more likely to participate in classroom discussion than were traditional students (less than 25 years of age). A greater percentage of nontraditional students participated in discussion (53.4% to 38.5%). Nontraditional students had a mean total interaction per student that was almost three times that of traditional students (3.1 to 1.06). A greater percentage of nontraditional students were "talkers" (39.3% to 23.4%), and those nontraditional "talkers" contributed almost twice as many comments and questions as did the traditional "talkers" (individual mean total interactions per class session: 7.56 to 3.87). Clearly, in the mixed-age classroom, student discussion is dominated by the nontraditional students.

When we examine the effect of age when controlling for gender, the picture is further clarified. Though nontraditional males are the demo-

TABLE 1
Interactions per Class Session by Student Gender, Student Age, and Instructor Gender

Category	Mean Interaction Per Session	Mean Attend	Mean No. Students Participate	Percent Students Participate	Mean Interaction per Student	No. Students Making Two or More Interactions	Percent Students Making Twoplus Interactions	Mean Interaction by Twoplus Students	No. Interactions by Twoplus Students	Percent All Interactions by Twoplus Students	N
All	31.65	17.38	7.65	44.0	1.82	5.10	29.3	5.71	29.12	91.9	2711
Males	5.81	3.72	1.41	37.9	1.56	0.95	25.5	5.64	5.36	92.2	581
Females	25.84	13.65	6.24	45.7	1.89	4.15	30.4	5.73	23.78	92.0	2130
Traditional	11.56	10.90	4.19	38.5	1.06	2.56	23.4	3.91	10.01	86.6	1701
Nontraditional	20.10	6.47	3.46	53.4	3.10	2.54	39.3	7.56	19.20	95.5	1010
Traditional females	8.48	7.72	3.12	40.4	1.10	1.87	24.2	3.87	7.24	85.4	1204
Nontraditional females	17.36	5.94	3.12	52.6	2.92	2.28	38.4	7.26	16.55	95.3	926
Traditional males	3.08	2.87	1.08	33.8	0.97	0.69	21.6	3.92	2.70	87.7	497
Nontraditional males	2.74	0.54	0.33	61.9	5.08	0.26	48.1	10.15	2.64	96.4	84
Male instructor	32.61	18.59	7.51	40.4	1.75	4.81	25.9	6.22	29.92	91.8	1469
Female instructor	30.68	16.13	7.79	48.3	1.90	5.39	33.4	5.25	28.30	92.2	1242
N	4938	2711	1193		4938						

graphic group most likely to participate in discussion (61.9%) and are likely to participate at a greater level (mean total interaction per session = 5.08) than any other demographic grouping, their presence in the sample was limited. Nontraditional females outnumbered nontraditional males by a factor of ten (34.2% to 3.1% of the observed students). In the absence of nontraditional males, nontraditional females were the primary student contributors to class discussion. The percentage of nontraditional females who participated in discussion was 52.6% versus 40.4% of traditional females and 33.8% of traditional males. Nontraditional females also had a higher individual mean total interaction per session (2.92) than did traditional females (1.1) and traditional males (0.97). Whereas nontraditional females trailed nontraditional males in terms of participation percentage and mean total interactions, traditional females outcontributed traditional males on both counts.

Instructor gender produced smaller differences in student participation than did student gender and age. Male instructors had a higher mean number of interactions per class session (32.61 to 30.68) than female instructors despite higher mean attendance levels in male-taught classes (18.59 to 16.13). However, female instructors did have a higher percentage of students participating in discussion (48.3% to 40.4%) and a higher mean total interaction level per student in their classes (1.90 to 1.75). Female instructors also had a higher percentage of "talkers" (33.4% to 25.9%). Interestingly, in male-taught classes, "talkers" made a greater number of comments than did "talkers" in female-taught classes (6.22 to 5.25). So while female and male instructors have a similar number of interactions per session, responsibility for student participation was consolidated into fewer hands in male instructors' classes.

As noted above, interactions were coded into three categories: *student initiated*, *instructor initiated*, and *direct questions*. Most interactions (56.3%) were *student initiated*, suggesting that students, not instructors, assume primary responsibility for initiating interaction in the classroom. Females had a higher mean *student initiated* interaction total than males (1.09 to 0.80), and nontraditional students exceeded traditional students (1.98 to .46). Again, the few nontraditional males (.345) outparticipated all other demographic groupings. They were followed by nontraditional females (1.85), traditional females (0.5), and finally, traditional males (0.35). These results suggest nontraditional students are much more comfortable interrupting an instructor, without invitation to do so, to make a comment or ask a question than are traditional students. The mean *student initiated* interaction rate was nearly identical in male and female-taught classes (1.00 to 1.06).

The gaps in interaction levels between male and female as well as be-

TABLE 2

Mean Interactions by Source per Student per Session

Category	Total	Student Initiated	Instructor Initiated	Direct Question	N	Mean Attend
All	1.82	1.03	0.64	0.15	2711	17.38
Males	1.56	0.80	0.66	0.18	581	3.73
Females	1.89	1.09	0.66	0.15	2130	13.65
Traditional	1.06	0.46	0.66	0.16	1701	10.90
Nontraditional	3.10	1.98	0.98	0.15	1010	6.47
Traditional females	1.10	0.50	0.44	0.16	1204	7.72
Nontraditional females	2.92	1.85	0.94	0.13	926	5.94
Traditional males	0.97	0.35	0.46	0.16	497	2.87
Nontraditional males	5.08	3.45	1.35	0.29	84	0.54
Male instructor	1.75	1.00	0.65	0.11	1469	18.36
Female instructor	1.90	1.06	0.64	0.21	1242	16.34
N	4938	2781	1743	414	2711	

tween traditional and nontraditional students narrowed considerably with *instructor initiated* interactions. Males and females had identical mean levels of *instructor initiated* interactions, whereas nontraditional student levels exceeded that of traditional students by only 0.3 interactions per session (0.98 to 0.66)—a significant decrease from the *student initiated* gap of 1.52. Traditional males and traditional females had nearly identical mean *instructor initiated* interaction levels (0.46 to 0.44), whereas nontraditional males exceeded nontraditional females by 0.41 (1.35 to 0.94)—another significant drop from the *student initiated* gap of 1.60. Mean *instructor initiated* interaction levels were very similar in male- and female-taught classes (0.65 to 0.64).

Direct question interactions departed from the patterns established in *student* and *instructor initiated* interactions. Males slightly exceeded females in mean *direct question* levels (0.18 to 0.15), and traditional students slightly exceeded nontraditional students (0.16 to 0.15). Also female instructors had a mean *direct question* level that was almost twice as large as that of male instructors (0.21 to 0.11), accounting for two thirds of the difference in mean total interactions in male- and female-taught classes. However, one female instructor proved to be a statistical outlier regarding direct questions. This instructor accounted for 34.5% of all direct questions. If we remove this instructor's course from the analysis we find that students in courses taught by male and female instructors had identical mean direct questions per session of 0.11.

To test the significance of these variables (student gender, student age, instructor gender), and others that previous research suggests are significant (attendance, week in semester, number of sessions per week,

course level and time of day), ordinary least squares regression was utilized. Based on previous research, we expected that attendance, student gender (female = 1), student age (traditional = 1), courses which met once per week, and morning courses to have negative effects on interaction. We expected week in the semester, course level, instructor gender (female = 1), as well as afternoon and evening courses to have positive effects. As Table 3 indicates, the regression equations had adjusted *R* squares that ranged from 0.109 to 0.107. Attendance in the observed classes ranged from a low of 4 students to a high of 33 students. The effect of attendance was strongly significant and negative in each equation as predicted. As others (e.g., Howard, Short & Clark, 1996) have noted, increased attendance does limit classroom interaction. The size of the impact, as measured by beta scores, was larger for attendance than for any other variable in each of the equations.

TABLE 3
Ordinary Least Squares Regression of Total Interactions by Selected Independent Variables

Variable	Model I		Model II		Model III	
	B	Beta	B	Beta	B	Beta
Attendance	-0.140*** (0.014)	-0.223	-0.142*** (0.014)	-0.226	-0.141*** (0.014)	-0.226
Age	-1.509*** (0.169)	-0.174	-1.516*** (0.170)	-0.175	-1.553*** (0.170)	-0.179
Gender (Female = 1)	-0.377* (0.197)	-0.037	-0.447* (0.195)	-0.044	-0.450* (0.194)	-0.044
Week in Semester	-0.039* (0.019)	-0.038	-0.037* (0.019)	-0.036	-0.037* (0.019)	-0.036
One session Per week	-0.721*** (0.213)	-0.086	-0.504* (0.201)	-0.060	-0.474** (0.186)	-0.056
Instructor gender (Female = 1)	0.230 (0.190)	0.027	0.059 (0.184)	0.007	0.230 (0.203)	0.027
Course level	0.320** (0.112)	0.074	0.340** (0.117)	0.078	0.254* (0.118)	0.059
Evening	0.573* (0.226)	0.061				
Afternoon			-0.124 (0.189)	-0.014		
Morning					-0.349 (0.213)	-0.041
Constant	5.735*** (0.527)		5.944*** (0.521)		6.143*** (0.536)	
Adjusted <i>R</i> Square	0.109		0.107		0.107	
<i>N</i> = 2711						

NOTE: Numbers in parentheses are standard deviations.
p* < 0.05. *p* < 0.01. ****p* < 0.001.

As predicted, the influence of student age (traditional = 1) was strongly significant and negative in each equation. Being a traditional student made one much less likely to participate frequently in classroom discussion. The impact of student gender was significant and negative in each equation. However, the beta score for student age was three or more times larger than effect of student gender, suggesting that gender plays less of a role in predicting student participation in the mixed-age college classroom than do student age and attendance. Interestingly, the influence of instructor gender (female = 1), though positive, was not significant in any equation.

The effect of week in the semester, although small, was significant, but in the opposite direction than was anticipated. Closer inspection of the trends across the semester revealed that as the semester progressed, the percentage of total interactions from *student initiated* interactions increased, whereas the proportion of total interactions attributable to both *instructor initiated* and *direct questions* declined, thus accounting for the negative effect.

The impact of a course meeting only once per week was negative and significant in each equation as predicted. The impact of course level was positive and significant in each equation. Of the various day parts (morning, afternoon, evening), only evening (courses beginning at or after 4:30 p.m.) was found to be significant.

Table 4 provides the results of ordinary least squares regression of mean student interactions by the source of interaction. The results suggest that the model best explains variations in *student initiated* interactions (adjusted *R* square = 0.121), but does a poor job explaining variations in *instructor initiated interactions* (adjusted *R* square = 0.029) and *direct questions* (adjusted *R* square = 0.020). In all three equations the effect of attendance remains negative and significant, although the size of the effect as measured by beta score decreases from -0.221 for *student initiated* to -0.097 for *instructor initiated* to -0.080 for *direct questions*. It appears the negative impact of attendance is most strongly felt on *student initiated* interactions.

The influence of student age (traditional = 1) is negative and significant for both *student initiated* and *instructor initiated* interactions, but positive and not significant for *direct questions*. The size of the influence, measured by beta score, also declines from *student initiated* to *instructor initiated*. Again, this suggests that the impact is felt most strongly on *student initiated* interactions. The effect of student gender (female = 1) is negative, but not significant in any model. The effect of instructor gender was also not significant in any of the equations. The influence of course level was positive and significant for *student initi-*

TABLE 4

Ordinary Least Squares Regression of Mean Student Interactions by Source of Interaction

Dependent Variable Variable	I Student Initiated Interactions		II Instructor Initiated Interactions		III Direct Questions	
	B	Beta	B	Beta	B	Beta
Attendance	-0.106*** (0.010)	-0.221	-0.027*** (0.006)	-0.097	-0.007*** (0.002)	-0.080
Age (Traditional = 1)	-1.040*** (0.128)	-0.157	-0.476*** (0.079)	-0.123	0.007 (0.025)	0.006
Gender (Female = 1)	-0.246 (0.149)	-0.032	-0.088 (0.091)	-0.019	-0.042 (0.029)	-0.030
Week In Semester	0.012 (0.015)	0.015	-0.036*** (0.009)	-0.080	-0.015*** (0.003)	-0.105
One session Per week	-0.530** (0.162)	-0.082	-0.245* (0.099)	-0.066	0.054 (0.031)	0.046
Instructor Gender	0.231 (0.144)	0.036	-0.050 (0.088)	-0.013	0.050 (0.028)	0.043
Course level	0.353*** (0.085)	0.107	0.021 (0.052)	0.011	-0.054*** (0.016)	-0.090
Evening course	0.598*** (0.171)	0.083	0.025 (0.105)	0.006	-0.050 (0.033)	-0.038
Constant	3.279*** (0.400)		1.952*** (0.244)		0.504*** (0.077)	
Adjusted R Square	0.121		0.029		0.020	
N = 2711						

NOTE: Numbers in parentheses are standard deviations.

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

ated interactions suggesting an increased confidence on the part of students that leads to more interactions. The effect of course level for *direct questions* was negative and significant, suggesting instructors rely on this technique to stimulate discussion more in entry-level courses than in upper-level courses.

Week in the semester was not significant for *student initiated* interactions, but it was negative and significant for both *instructor initiated* interactions and *direct questions*. This suggests that instructors spend less effort attempting to stimulate student participation as the semester progresses. The effect of a course meeting only once per week was negative and significant for both *student initiated* interactions and *instructor initiated* interactions, but it was positive and not significant for *direct questions*. Course level had a significant positive impact on *student initiated* interactions but a negative and significant impact on *direct questions*, again suggesting that instructors are more apt to directly call on students

in entry-level courses and to rely on student efforts to initiate interaction in upper-level courses. Finally, the effect of courses that met in the evening hours was significant and positive with regard to *student initiated* interactions, but it was not significant for *instructor initiated* interactions nor *direct questions*.

Given the significant negative impacts of student gender (female = 1) and age (traditional = 1), we asked whether these influences might be felt more strongly for various demographic groups of students in classes taught by instructors of a particular gender. We addressed this issue by using analysis of variance (ANOVA) to compare mean interaction levels of various student groupings by instructor gender. The ANOVA results presented in Table 5 suggest that for total interactions, student initiated interactions, and instructor initiated interactions instructor gender produced significant differences only for traditional female students.⁵ Whereas nontraditional female students had higher, though not statistically significant, mean levels of interactions in male-taught classes, their

TABLE 5
Analysis of Variance (ANOVA) of Mean Interactions per Student by Source of Interaction

Instructor Gender	Total Interactions		Student Initiated Interactions		Instructor Initiated Interactions		Direct Questions	
	Male	Female	Male	Female	Male	Female	Male	Female
All (N = 2711)	1.75	1.90	1.00	1.06	0.65	0.64	0.11	0.21***
Females (N = 2130)	1.78	2.01	1.03	1.14	0.65	0.67	0.10	0.20
Males (N = 581)	1.67	1.37	0.89	0.63	0.64	0.50	0.14	0.24
Traditional (N = 1701)	0.86	1.30	0.37	0.56	0.40	0.51	0.09	0.24
Nontraditional (N = 1010)	3.28	2.90	2.07	1.88	1.08	0.86	0.14	0.16
Traditional females (N = 104)	0.85	1.38***	0.39	0.66**	0.36	0.52*	0.09	0.23***
Traditional males (N = 497)	0.87	1.10	0.32	0.39	0.46	0.46	0.09	0.25***
Nontraditional females (N = 926)	3.04	2.80	1.90	1.80	1.04	0.85	0.11	0.16
Nontraditional males (N = 84)	4.77	7.67	3.12	6.22	1.33	1.44	0.32	0.00

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

younger counterparts, traditional females, were significantly more likely to initiate an interaction and to respond to an instructor's invitation for interaction in female-taught classes. It appears that younger female students experience and interpret the college classroom differently than do older females. Traditional college age students, male or female, participate at a very low rate in courses taught by males; however, when the instructor is female, traditional females are significantly more likely to both initiate interactions and respond to instructor initiated interactions. At the same time, traditional males continue to participate at the same lower rate—thus falling behind their female counterparts in female-taught courses. This suggests that if the mixed-age college classroom is a “chilly” climate for young female students, it is even more “chilly” for young male students. Any “chilly” climate is due mostly to student initiated interactions. The data suggest that instructors directly call on traditional students more often than nontraditional students and call on males and females equally often. Males and females are also equally likely to respond to instructor initiated interactions (see Table 2). Class size (attendance) and student age are better predictors of student participation than is student gender. The negative effects of age lessen for female students in female-taught courses, but not for male students in courses taught by either gender. This leads us to the issue of why students choose to participate and choose not to participate.

Reasons for Participation and Nonparticipation

Utilizing a survey, we asked students to identify reasons for their participation in class discussion. Table 6 shows that regardless of the demographic group, the four most frequently cited reasons were the same: “I am seeking information or clarification”; “I have something to contribute to the class”; “I learn by participating”; and, “I enjoy participating.” However, utilizing Kendall's tau to compare responses by student age, student gender, and instructor gender we found that scores were significantly different only when comparing traditional and nontraditional students on these four dimensions. Nontraditional students were more likely to say they participated for each of the four reasons than were traditional students. In comparing male and female students, the only significant difference was that females were more likely to cite “other” than were males.⁶ In female-taught courses, students were significantly more likely to say they participated because it was a part of their grade. We attribute this result to the previously mentioned female instructor who allowed students to earn extra credit points via attendance and participation.

TABLE 6

Reasons for Participation by Student Age, Student Gender, and Instructor Gender (Kendall's tau)

(Circle as many as you feel are important.) When I choose to participate in class discussion, I do so because	All	Nontra- ditional	Tradi- tional	Male	Female	Male Instructor	Female Instructor
I am seeking information or clarification;	82.2	89.8	77.3**	84.6	82.4	84.6	80.9
I have something to contribute to the class;	56.5	66.7	49.2**	48.1	59.6	56.9	57.3
I learn by participating;	52.5	64.8	43.2**	44.2	55.3	52.3	53.6
I enjoy participating;	44.2	56.5	34.8**	38.5	46.3	46.9	41.8
participation is part of my grade;	22.3	21.3	23.5	13.5	25.0	15.4	30.9**
I disagree with something the instructor said;	19.8	18.5	21.2	15.4	21.3	20.8	19.1
I am trying to make the class more interesting;	12.8	14.8	11.4	13.5	12.8	15.4	10.0
I feel obligated to do so when other students don't participate;	12.8	11.1	14.4	13.5	12.8	14.6	10.9
other (please specify):	3.3	1.9	5.3	0.0	4.8**	3.8	3.6
N	242	109	133	52	190	132	110

** $p < 0.01$

In their interview comments, as well, nontraditional students, as compared to their younger counterparts, defined the college classroom as a more "open" and friendly space where their participation is welcome and, potentially, valuable. Several nontraditional students, in describing the type of course they like best, mentioned class discussion.

I like a combination of lecture where I get information and also a class where discussion is encouraged and I can get feedback. (Nontraditional Female)

I don't like a class that is totally lecture. I like it when there's discussion. (Nontraditional Female)

I prefer discussion. It is much more of an adult learning style. The best people are participating in it and you have to be prepared to get something out of a discussion. I think it's a critical part [of the course. Because] that's how a student takes in learning. . . . They get involved with the material. (Nontraditional Male)

[Students who participate in discussion are] . . . learning to share their ideas and listen to other people verbalize their ideas. The more I participate, the more I get out of a class. If I just listen I don't get near as much out. (Nontraditional Female)

On the other hand, several traditional students in the course of their interviews specifically mentioned they did not like courses that required student participation.

I've always been afraid people would criticize me and think, "She should know this." (Traditional Female)

Students may not contribute to class discussion because they feel uncomfortable asking questions or, more than likely, they feel they're going to say the wrong thing. (Traditional Male)

I am totally against instructors who require participation. You wouldn't require biology for math, so I don't think you should require speech in a [non-speech] class. (Traditional Male)

I think it's unfair to require participation from students who don't know how to ask questions, or are uncomfortable asking questions, or are just shy people. (Traditional Female)

Recognizing that many students were unwilling or unable to participate in class discussion, we asked students to identify reasons for their nonparticipation in our survey. As Table 7 shows, students cited "the feeling that my ideas are not well enough formulated" and "the feeling that I don't know enough about the subject matter" most frequently.

TABLE 7

Reasons for Nonparticipation by Student Age, Student Gender, and Instructor Gender (Kendall's tau)

(Circle as many as you feel are important.) When I choose NOT to participate in class discussion, I do so because	All	Nontra- ditional	Tradi- tional	Male	Female	Male Instructor	Female Instructor
of the feeling that my ideas are not well enough formulated;	38.0	39.4	45.7	37.0	44.4	42.9	42.7
of the feeling that I don't know enough about the subject matter;	38.0	36.4	48.3	47.8	41.4	42.9	42.7
of the chance that I would appear unintelligent in the eyes of other students;	24.0	20.2	32.8*	23.9	27.8	25.2	29.2
I had not done the assigned reading;	21.1	15.2	31.0**	47.8	17.2**	30.3	15.6**
of the chance that I would appear unintelligent in the eyes of the instructor;	16.5	13.1	23.3*	21.7	17.8	14.3	20.8
other (please specify);	16.1	21.2	15.5	13.0	19.5	14.3	22.9
of the large size of the class;	13.6	13.1	17.2	8.7	17.2	18.5	11.5
of the possibility that other students in the class would not respect my point of view;	7.0	3.0	12.1**	6.5	8.3	6.7	9.4
the course simply isn't meaningful to me;	5.0	3.0	7.8	10.9	4.1	8.4	2.1*
of the possibility that the teacher would not respect my point of view;	3.3	1.0	6.0	4.3	3.6	4.2	3.1
of the possibility that my comments might negatively affect my grade.	2.1	0.0	4.3*	4.3	1.8	3.4	1.0
N	242	109	133	52	190	132	110

* $p < 0.05$; ** $p < 0.01$

Again, utilizing Kendall's tau, we found that the percentage who cited these reasons was not significantly different by student age, student gender, or instructor gender. However, there were significant differences regarding some of the less frequently cited reasons for nonparticipation. Traditional students were significantly more likely than nontraditional to cite concerns about appearing unintelligent to the instructor or other students, the possibility that other students would not respect their point of view, and the possibility that their comments might negatively affect their grade. All of which indicates a perception of the college classroom as being a somewhat dangerous, unaccepting environment. Traditional students, male students, and students in male-taught courses were each significantly more likely to say they did not participate because they had not done their assigned reading than were their respective counterparts (nontraditional students, females, and students in female-taught courses). Thus one reason why traditional students (and to a lesser extent males and students in male-taught classes) perceive the classroom as being hostile and unaccepting may be their lack of preparation to participate.

Implications and Conclusions

Students learn more when they take an active role in their learning—seeing themselves as engaged participants in their education rather than passive recipients of knowledge from experts (see for example Rau & Heyl, 1990; Smith & Malec, 1995; Smith, 1996; Thompson, 1996). Kember and Gow (1994) found that students who participate in classroom discussion learn more than those who do not. Weast (1996) and Garside (1996) have demonstrated that active participation can facilitate critical thinking. But despite the potential benefits, the present study illustrates that different types of students participate at different levels. In particular, traditional students are the group most reluctant to participate. It is the responsibility of college instructors to facilitate their learning as well as the learning of students who participate more readily.

We need to be cautious in applying the findings of this study due to the limitations of the sample. The norms that operate at a small extension campus of a major state university may well be different than those that operate at a major residential campus or even at a small private residential liberal arts college. The participation of males and females, traditional and nontraditional students at highly selective institutions may also vary considerably from that described herein. Clearly, further research conducted at various types of institutions is needed.

Given these limitations, the evidence presented suggests that in the mixed-age college classroom, nontraditional students are far more likely

to initiate discussion than are their traditional (18- to 24-year-old) counterparts. Though the gap narrows considerably with instructor initiated interactions, nontraditional students are also more likely to respond to instructor attempts to initiate class discussions. College instructors thus face the continued existence of the "consolidation of responsibility" (Karp & Yoels, 1976). Our challenge is to turn more students into "talkers" in order to better facilitate their learning.

This study provides little support for the "chilly climate" thesis. If the mixed-age college classroom is "chilly," it is not so for nontraditional female students, who account for the majority of interactions, nor for nontraditional males, who have the highest mean level of participation. It may be a "chilly" climate for traditional females when the instructor is male, but it is equally "chilly" for traditional male students. When the instructor is female, the climate is more "chilly" for traditional males than females. Both groups participate at a significantly lower rate than nontraditional students. Instructor gender also played a limited role in reasons students gave for their lack of participation. Students in male-taught classes were significantly more likely to worry about how they appeared to the instructor and were significantly more likely to find the course not to be meaningful. This suggests that female instructors may do a better job of creating a classroom environment that engages students and makes them feel sufficiently comfortable to participate.

This study also suggests that the lower participation level of traditional students is not due to instructors who only call on nontraditional students. However, instructors do seem to relinquish an increasing amount of responsibility for participation to the students as the semester progresses by inviting less participation through instructor initiated interactions and direct questions. This approach contributes to the dominance of nontraditional students who are most comfortable initiating interactions without an instructor's invitation to do so. Part of the motivation for this tendency may be that as the semester progresses instructors feel an increased pressure to "get through the material" and therefore limit their invitations for discussion. Another possible explanation is that both students and instructors become increasingly comfortable with the norms that have developed over the course of the semester and fall into a pattern where responsibility for discussion is consolidated into the hands of a few students. The most obvious response to this dilemma is for instructors to increase the frequency of their invitations to participate in classroom discussion via direct questions and instructor initiated interactions and to maintain that level of invitation throughout the semester. Although nontraditional students will still be the most likely to participate, the gap will likely be much smaller

than when instructors take a more passive approach and rely on students to initiate interactions.

Additionally, this study provides support for department chairs who wish to seek structural changes. The results support the argument for lower enrollment caps in courses. While the largest course included in the sample had 33 students, the effect of larger class size was the largest significant predictor of student participation. We can only speculate that in mass lecture courses of one hundred or more the effect would be even more profound. In effect, if participation facilitates learning and large enrollments inhibit participation, then, other things being equal, large enrollments will hinder learning. Department chairs also find in this study encouragement to resist pressures to offer courses that meet only in once-per-week extended sessions (a practice that also discourages discussion).

Finally, two major reasons for the lack of participation of traditional students were their concerns with how they appear in the eyes of their classmates and their lack of preparation for class. Instructors can play an active role in addressing each of these issues. Despite her contention that instructors play a relatively small role in shaping participation in the classroom, Fassinger (1995, 1996) suggests that instructors can actively design their courses to foster a positive emotional climate, develop student confidence, and develop interaction norms that facilitate interaction. Nunn's (1996) research suggests that this can be accomplished by praising students, by asking students questions, by asking students for elaboration, by using student names, and by repeating student answers.

In the attempt to create new classroom norms that facilitate active student participation and thus greater learning, we suggest that it is appropriate to encourage and reward discussion by making it a component of the course grade or, alternatively, by offering extra credit for participation. One way to encourage students to evaluate their own participation and their responsibility for it, is to allow students to grade themselves on their discussion. Ideally, this would be done at the end of each class session so that students can immediately assess their input in class discussion. Students should be given a grading scale that is as concrete as possible (e.g., 1 point for attendance without participating in discussion; 2 points for making a single comment; 3 points for more than one comment; 4 points for equitable participation; and 5 points for participation that exceeds normative expectations). Based on the lead author's teaching experience, we have found that in response to such a system virtually every student present will participate in discussion and that students generally grade themselves in a fair manner.

To help alleviate students' fears of unformulated ideas, a lack of knowledge of the subject matter, and appearing unintelligent to the in-

structor or other students, instructors could provide questions for discussion to accompany each assigned reading so that students will have the opportunity to consider questions and reflect upon them prior to class. Thus students can formulate their responses and investigate topics to develop knowledge ahead of time and, hopefully, reduce the fear of appearing unintelligent. Positive instructor feedback for students who participate can also help students overcome their fear of participation. By providing questions for discussion ahead of time and grading students on their participation we can hold students accountable for completing assigned readings and being prepared to discuss them. Thus we can influence students' definitions of the college classroom by creating the expectation that each student will participate in class discussion.

In sum, we need to question our preexisting frames (Russell & Munby, 1992) about university teaching that limit our creativity and perpetuate passive and uninvolved learning. To begin, we should identify and discuss the norms of the "consolidation of responsibility" and "civil attention"⁷ (Karp & Yoels, 1976) that prevail in most college classrooms. If we begin our courses by making it clear that these classroom norms, which students have come to expect and find comfortable and which allow them to remain passive observers, do not apply in our courses, then we have a starting point for change. We can tell students why we value their participation (e.g., they learn by participating; it makes the class more interesting for all). There is also an abundance of pedagogical research (for examples see Bell & Bradburn, 1996; Hamlin & Janssen 1981; Longmore & Jarboe, 1996; McBroom & Reed, 1994; McKinney & Graham-Buxton, 1993; Sernau, 1995) that offers suggestions for collaborative learning and other strategies for getting students involved in classroom discussion. The task is daunting, but not impossible.

Notes

¹The observed courses included A103 "Evolution and Prehistory (Anthropology)"; R220 "Sociology of the Family"; R359 "Sociological Statistics"; B310 "Life Span Development (Psychology)"; B424 "Theories of Personality (Psychology)"; N100 "Contemporary Biology"; N217 "Human Physiology"; A110 "Birth and Death of the Universe (Astronomy)"; C101 "Elementary Chemistry I"; M119 "Brief Survey of Calculus I"; A243 "Nursing: Adaptive Patterns IV: Cognition/Interaction/Coping"; S141 "Introduction to Social Work"; A201 "Introduction to Financial Accounting"; SPV477 "Conflict Management (Organizational Leadership)"; E337 "Classroom Learning Environments (Education)"; and H340 "Education and American Culture (Education)".

²Two of the observed courses (N217 "Human Physiology" and C101 "Elementary Chemistry I") also had a 2-hour "laboratory" component. In these courses only the lecture portion of the class was observed.

³Ten sessions of 14 courses were observed. Due to scheduling difficulties only nine sessions of S141 "Introduction to Social Work" were observed. Observations of R359

"Sociological Statistics" were discontinued after seven sessions when a student in R359 contacted the senior researcher and indicated that the presence of an observer was interfering with her ability to learn.

⁴Copies of the surveys are available upon request from the authors.

⁵The significant differences in direct questions by instructor gender are attributable to the previously mentioned female instructor who accounted for 34.5% of all direct questions.

⁶There were no identifiable patterns in the responses of the small percentage of female students who cited another reason for their participation.

⁷The "civil attention" norm, according to Karp and Yoels (1976), means that students are careful to maintain an *appearance* of paying attention without at the same time showing so much involvement that the situation becomes risky for them. Thus students attend class, do not hold private conversation while the instructor is talking, nod their heads occasionally, and maintain enough attention to laugh at the appropriate junctures, but do not become involved via discussion which could potentially put them at risk.

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How Students Coped with the War

The Experience of Lebanon

The idea of writing this article came from my advisor at Teachers College, Columbia University. He asked me to give an oral presentation on my experience as a college student in war-torn Lebanon. At the time, my impressions of the war had been one-dimensional: I was convinced that the war had had a devastating effect on people's mental health and that just like thousands of my peers I had been denied a normal college experience. When I started researching the topic, I came to realize that there was no strong evidence of any lasting psychological damage to the Lebanese people and found that various studies and journalistic reports concurred that the Lebanese students, by and large, were able to cope successfully with the war and fashion a relatively normal existence throughout the civil conflict. This realization forced me to look back on my own experience more objectively: I was indeed able to receive a quality education; my social life was rather rewarding; I took part in many social and cultural events on and off campus; I had my share of good times and cultivated great friendships; and had many stimulating cultural and social experiences. I was no longer sure which theory to present to my classmates: that the war crippled students and interfered with their academic and social life or that students had survived the war unaffected.

I decided to take my presentation a step further and write a doctoral dissertation based on this topic. In addition to compiling extensive liter-

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ature on war and coping, I interviewed a group of students who attended the American University of Beirut (my alma matter) during the war and asked them to reflect on their experiences.

In this article I will present a summary of my findings, which I hope will shed some light on the question at hand: How did students cope with the war? Although the focus of this article is on older students' experiences, my discussion will also include a part on how younger students coped with the war.

The Psychology of Coping

Coping is a process common to every individual and is often used interchangeably with the terms "adjustment," "adaptation" (Dimsdale, 1978), "mastery" (Vingerhoets, 1985), even "survival" (Bloom & Halsema, 1983). Although most commonly associated with warlike settings, coping has been observed in a wide range of situations, from life transitions to pain, loss, and death of loved ones (Dimsdale, 1978).

Coping is an integral part of the stress theory. According to its formulator, Richard Lazarus, there is a two-way relationship between the person and the environment, which is mediated by two cognitive exercises: appraisal and coping. The former refers to the individual's assessment of every encounter in terms of its implications on the individual's well-being, whereas the latter involves the behavioral and cognitive processes that help the individual deal with the stressor in regard to health, well-being, and social functioning (Vingerhoets, 1985).

Coping encompasses two responses: (a) external efforts focused on problem-solving techniques and direct action, and (b) internal efforts focused on emotions. In the action-oriented response the individual reacts directly to the stress and channels his or her resources in such a way as to alter the conditions that create a problem; for example, by confronting an enemy, avoiding a confrontation, or getting ready for an attack (Lazarus, 1982). The emotion-oriented response addresses the effects of a stressor and seeks to soothe them; it shields the individual from the psychological harm and palliates emotions of distress. Such efforts include denying the stressor or altering one's attitude toward the stressor by perceiving it as less threatening (Punamaki, 1986; Solomon, Mikulincer, & Flum, 1988).

It is widely accepted that war, defined as "any armed conflict which includes one or more governments, and causes deaths of 1000 or more people per year" (Zwi & Ugalde, 1989, pp. 633–634) is the foremost stressor known to mankind. Numerous studies have established a causal relationship between war stress and an array of physical and psychiatric disorders.

Day and Sadek (1982) asserted that exposure to the violence of warfare has grave psychological effects on both soldiers and civilians. These authors noted that those who suffered psychiatric injuries outnumbered those who died in combat. Their review of the literature identified the following negative physical and psychological effects: combat exhaustion, traumatic neurosis, muscle tension, irritability, amnesia, poor concentration, recurring nightmares and social withdrawal. Belenky (1982) reported that for every hundred "physical casualties" during the 1973 Arab-Israeli War, thirty were "psychiatric casualties," and many of them developed chronic disorders (p. 66).

Research on war stress focused on a condition known as posttraumatic stress disorder (PTSD), which frequently occurs in the aftermath of a catastrophic trauma and is often associated with prolonged and intense warfare. PTSD has been studied particularly with the Vietnam War veterans. It is an anxiety disorder that presents a wide variety of symptoms caused by a "recognized stressor that would evoke significant symptoms of distress in almost everyone" (Hayman, Sommers, Flanagan, & Parsons, 1987, p. 363). The stressor should be "traumatic" or "outside the range of usual human experience," that is, sudden, intense, and unexpected anxiety which overwhelms the individual's abilities to cope and to defend himself (Keane, 1985, p. 420). Examples of traumatic events include one's life or loved ones being threatened, one's property being destroyed, or the killing or serious injury of a loved one (Kulka et al., 1990). PTSD includes such symptoms as flashbacks, dreams, hallucinations, startle response, tensions, avoidance of thoughts or feelings, amnesia, irritability, sleep disturbance, hyperventilation, and so forth (Slaby, 1989).

Despite the wealth of research supporting the notion that war stress precipitates mental health problems, a considerable number of studies refute this theory. Rachman's book *Fear and Courage* is valuable in showing an alternate perspective on war stress, particularly in the immediate parallels that can be drawn with the effects of the Lebanese war on civilians. Analyzing the British literature on the reactions of civilians during the air attacks on London during World War II, Rachman (1990) concluded that "the great majority of people endured the air raids extraordinarily well, contrary to the universal expectation of mass panic. Exposure to repeated bombings did not produce significant increase in psychiatric disorder. Although short-lived fear reactions were common, surprisingly few persistent phobic reactions emerged (p. 175). Substantiating his argument with statistics, he added: "Of the 578 civilian casualties admitted to hospitals in a heavily raised area, only two were suffering primarily from psychological disturbance (p. 20)". Rachman further noted that civilians' reaction during the London blitz, namely "wide-

spread habituation, unexpected resilience, few phobic reactions, slight or no increase in psychiatric disorders" were not uncommon (p. 25).

War accounts from Japan and Germany showed that civilians in those nations were equally resilient when they were repeatedly attacked. For example, Rachman quoted a report on the astonishing and certainly unpredictable resilience displayed by people after the atomic bomb attack on Hiroshima, easily "the most traumatic event in history".

Psychoses, traumatic neuroses, and other severe psychiatric disorders appear to have been a rare occurrence following the A-bomb attacks. A small percentage of survivors probably developed some minor neurotic symptoms that were evoked or precipitated by disaster experiences, such as excessive fatigue, recurrent bodily complaints, and persistent phobias. (p. 28)

Recent studies on the effect of the Holocaust on survivors have questioned the conclusions of earlier clinical reports describing a wide range of physical and psychological impairments suffered by survivors. For example, Harel in 1983, Klein in 1984, and Solkov in 1981 stressed "the remarkable adaptive capacities of Holocaust survivors, their creation of healthy families, and their social achievements" (Harel, Kahana, & Kahana, 1988, p. 415).

Coping in Lebanon

The civil war that erupted in 1975 was the most devastating military conflict that Lebanon has witnessed in its modern history. It was the breaking point of years of tension and power struggle between the Muslim and the Christian communities, which represent the two major religious groups in Lebanon. From its outset, the Lebanese civil war was an endless series of destruction, bloodshed, and divisiveness that led to the segregation of the population along denominational lines and political affiliations. This, in turn, created a tragic decline in all cultural and educational values and ultimately led to the collapse of the economy's productive capacity.

Once a prosperous country, where people celebrated the amalgamation of Arab and Western cultures, enjoyed freedom of expression, and a high level of education, arts, and entertainment, Lebanon seemed to have lost it all. The government collapsed, and armed militias and warlords prevailed, each in his own fief. Killing, sniping, indiscriminate shelling, abduction, and car bombings were commonplace. Endless rationing of electricity, water, and gasoline, hiding in shelters, enduring illegal occupation of housing, and having to coexist day by day with the fear and anxiety of the unforeseen became a way of life. All sectors of

the economy suffered, and most religious, social, and cultural institutions were rendered dysfunctional.

In 1991, subsequent to the Taif Accord, the war was brought to an end, at least as far as the armed conflict was concerned. With a death toll exceeding 100,000 people, physical damage upwards of \$50 billion, widespread poverty, social unrest, rising inflation, and a rapid depreciation of the currency (Krayem, 1989), the devastating effect of the civil war is undisputed; however, with respect to the toll that the ongoing strife has taken on mental health in Lebanon, opinions are divided and studies are inconclusive. Most of the studies are based on various authors' perceptions of a particular war event; only a small number relied on empirical findings. By and large, reports from various periods of the civil conflict maintained that most Lebanese people seemed to have emerged from the harshness of the war relatively unaffected.

In examining the psychiatric effects of the civil war in Lebanon, Nasr, Racy, and Flaherty (1983) posited that, overall, the Lebanese endured the crisis surprisingly well, all the property and human losses notwithstanding. However, the authors' survey of mental health institutions found evidence of PTSD symptoms, including insomnia, depression, stomach problems, and phobias.

Khalaf (1988) examined the sociological outcomes of the war and noted the prevailing state of demoralization and humiliation of Lebanese civilians, decadence of social and public values, proclivity for violence, compromise of patriotic values, embracement of territoriality and self-interest, reconfiguration of social classes, and prevalence of a culture of dishonesty and profiteering.

On the other hand, Pattison (1984) noticed a behavioral pattern that characterized the Lebanese throughout the war. He observed that after surviving nine years marred by endless military offensives, militia rule, a divided capital, an Israeli invasion, and a paralyzed economy, and after being haunted by the specter of militiamen, snipers, and car bombs, the Lebanese people were remarkably well adjusted and maintained a care-free attitude about the war. He wrote:

I fully expected to find a war-devastated population, with obvious evidence of war trauma. Much to my surprise, this was not the case. The Lebanese population, both Christian and Moslem were relieved, cheerful, energetic, enthusiastic, basically rebuilding their country. It was like a country of buzzing worker bees. I did not find obvious cases of psychic traumatization, and only with difficulty did I unearth indications of indirect effects of the war on psychological well being. (p. 35)

The author attributed this relative psychological well-being to the

“high lethality, low intensity” nature of the Lebanese war; that is, hostilities were not on a massive scale, they only affected a limited number of individuals at a time. When exposure to war trauma is confined to a few but the casualty count is considerable, severe anxiety does not necessarily ensue, as was the case in such “low lethality, high intensity” wars as the Israeli-Egyptian wars during the 60s and early 70s. Similarly, Saigh in 1984, 1985, and 1988 found no evidence of anxiety or PTSD following exposure to war-related events among his samples of Lebanese college students.

A symposium titled *The Impact of War on the Mental Health of the Lebanese* (1983) maintained that the complexity and contradictory nature of the war, coupled with the exposure of entire communities to repeated life-threatening assaults, increased the likelihood that individuals would develop symptoms related to schizophrenia as well as extreme and abnormal behaviors. Without providing figures, the symposium concluded that depression caused by loss of loved ones or loss of physical property, drug addiction, and reliance on tranquilizers as a reactive behavior to stress were particularly prevalent in Lebanon during the period of the war.

In his memoirs as war correspondent for *The New York Times* in Beirut and Jerusalem, Friedman (1989) was perplexed by the ability of the Lebanese to endure the ongoing hardships of the war. He identified five interrelated coping patterns of the Lebanese: (1) developing an emotional shield, (2) rationalizing life-threatening events by using probability and inferences, (3) perceiving the environment selectively, (4) maintaining a sense of detachment in regard to the war, and (5) channeling energy into productive activity. According to Friedman, the following anecdote captured the essence of denial as it relates to the instinct of the Lebanese for survival and their desire to bring some structure into their chaotic existence:

A Lebanese socialite . . . invited an American friend of mine for dinner on Christmas Eve. The elegant holiday banquet was held at her apartment near the Green Line, a swath of gutted and burned-out buildings that formed the no-man’s-land between predominantly Muslim West Beirut and Christian East Beirut. On this particular Christmas Eve in 1983, despite the holiday, rival Christian and Muslim militiamen were trading artillery salvos and machine-gun fire into the early evening, rocking the whole neighborhood. The hostess put off serving dinner, hoping things would settle down, but she could see that her friends were getting hungry, not to mention nervous. Finally, in an overture you won’t find in Emily Post’s book of etiquette, she turned to her guests and asked, “Would you like to eat now or wait for the cease-fire?” (p. 30)

Researchers on war and mental health in Lebanon warned against the

possibility of delayed stress reaction and an increase in substance abuse and violent behavior in the aftermath of the civil war.

War and Children

Research efforts on the mental health of the Lebanese children have focused either on the children's reactions to specific war experiences—for example, in articles by Abu Nasr et al. in 1981, Day and Sadeck in 1982—or on children's psychological functioning, anxiety level, depression, and behavioral disorder, as in those of Day in 1986 and Saigh in 1986 (in Saab, 1991). According to these studies, children living in Lebanon during the war were exposed to traumatic events that would potentially lead to PTSD. Macksoud and Aber's (1996) and Saab's (1991) research makes a unique contribution to understanding the effect of war on Lebanese children. Their findings concurred that an average Lebanese child was exposed to one or more of the following traumatic events: bombardment and shelling, displacement, witnessing violent acts, bereavement, and extreme poverty. These war traumas were positively related to PTSD symptoms, mental health symptoms, and adaptational outcomes.

A video made in 1989 for BBC, titled *War Generations*, included a vignette of a thirteen-year old Palestinian boy talking about his experience during the Israeli invasion in Beirut:

Friday, September 18th, 1982, someone knocked on the door. There were 13 of them. They made us line up on the wall and they started shooting us, five died including my father. I was paralyzed; my mother and sister were also seriously wounded. My brothers managed to hide. The soldiers came back once more, they hit me on my head and I lost consciousness again. When I woke up, I found out that my father was still breathing. I discovered that the bullet had hit him next to his heart. I tried to help him. I couldn't and he died. At night the cats came around. They could smell blood. I tried to get them to go away, but I couldn't move. I felt I was going mad. Three days later, someone heard my cries. He came and carried me to the hospital. Every time something happens, I remember, especially with the recent battles [of 1989]. (Saab, 1991, p. 27)

Saab recognized the difficulty of studying the effect of a single war trauma on children and maintained that the cumulative effect must be taken into consideration, particularly four variables: (1) the type of war trauma, (2) the number of traumas exposed to, (3) the length of the trauma, and (4) the extent or intensity of exposure. Accordingly, in her study of 100 Lebanese children and young adults, Saab ranked the traumas that the typical Lebanese child had experienced in his or her life-

time. Exposure to shelling or combat, displacement, extreme poverty, and witnessing violent acts were the most common traumatic experiences faced by Lebanese children. In contrast, involvement in military activities, being a victim of violent acts, and suffering physical injuries were less common experiences. She noted that this finding was expected in the study, because the war in Lebanon was very different from wars in Uganda or South Africa, where children had become direct targets of violence. In addition, the number and types of traumatic experiences varied significantly by age, gender, socioeconomic status, and region of residence; older children, mainly boys and those coming from lower socioeconomic backgrounds, experienced a higher number of traumas than younger children and children from higher socioeconomic backgrounds. Also, children who resided on the demarcation lines and the Chouf mountains overlooking Beirut were exposed to more traumatic events than children in West Beirut and the southern suburb. The author attributed this variability in exposure to traumatic experience to the fact that parents from low socioeconomic backgrounds did not have the means or resources to protect their children from experiencing the devastating effects of war, for example, by moving to safer areas, and lacked parental skills to reduce exposure to war (such as restricting outdoor activities).

The Study

A structured interview was given to a group of Lebanese alumni from the American University of Beirut (AUB) who attended the college between 1975 and 1990. The group consisted of 10 males (Akram, Ahmad, Hani, Henri, Khalel, Mazen, Moustafa, Osama, Wael, Ziad) and 10 females (Brigitte, Syrine, Hanine, Rima, Kawkab, Layla, Rana, Mona, Joumana, Zeina) ranging in age from 22 to 43, from various religious backgrounds (Sunnis, Shiites, Maronites, and Greek Orthodox).¹

AUB is a private, nonsectarian, independent university similar in administration and programs to American universities, offering a wide range of undergraduate and graduate programs with English as the language of instruction. It was founded in 1866 by Daniel Bliss as the Syrian Protestant College and was the first institution of higher education built in Lebanon. AUB's coming to existence was the culmination of a long history of Western influence on education in the Middle East. In 1920 the current name was adopted. AUB is governed by a board of trustees, residing in New York City, and has been chartered since 1863 by the State of New York (American University of Beirut).

AUB's picture-postcard campus comprises 73 acres and is housed in 82 buildings, including a medical center with a 421-bed teaching hospi-

tal. Academic programs are offered in five faculties: (1) arts and sciences, which includes the Division of Education programs; (2) medicine; (3) engineering and architecture; (4) agricultural and food sciences; and, (5) health sciences. The university awards a wide range of bachelor's and master's degrees and a very limited number of doctorates in select disciplines. Total annual enrollment is between 4,200 and 5,000 students, of whom more than 40% are women. Most of the students live with their families in Beirut; those who come from remote areas, including international students, are accommodated in the six single-sex residence halls.

Before the war the student body was almost equally divided between Lebanese and foreign nationals. Non-Lebanese included mostly Jordanians, Palestinians, Iranians, Pakistanis, Afghans, Americans, Canadians, and Cypriots (Jarrar, Mikati, & Massialas, 1988). Today students are predominantly Lebanese. Because tuition charges are high, mostly students from higher socioeconomic strata or students who receive financial assistance can attend, thereby giving AUB the reputation of an elitist institution of higher education.

The interview was divided into eight parts and consisted of various open-ended and forced choice questions mainly focusing on the following areas:

- Intensity and frequency of exposure to war events and attitudes toward the Lebanese conflict;
- emotional reaction and the coping mechanisms during stressful conditions;
- academic life;
- social life on and off campus;
- social and moral support systems;
- evaluation of the subjects' overall experience at AUB and perceptions of effects that the war had on their present lives.

Results and Discussion

The interviews revealed that the group consisted of middle- and upper middle-class, sheltered individuals whose parents were college educated and/or held influential positions. An interviewee noted, "I come from a background that was privileged. My parents did everything to shelter me away from the war, they could provide me with education, food, love, affection. All these details are important in a wartime. I'm not representative of those who suffered. I was extremely lucky" (Oweini, 1994, p. 188).

Belonging to the middle and upper middle echelon of the Lebanese society assured students comfortable lifestyles and homes in safer neighborhoods of Beirut and, more importantly, equipped them with the necessary tools to maneuver with facility within the system and to overcome war-related nuisances. These prerogatives ranged from owning a generator that supplied power to their households and multiple phone lines to relying on their fathers' political clout to rescue them, should they encounter any difficulties with the unruly militias roaming the streets of West Beirut.

Fifteen interviewees reported exposure to at least one life-threatening incident on and off campus during their college years. The rest reported being exposed to situations fraught with danger, such as sitting in the corridor while shells were pounding their neighborhoods, but did not think their lives had been at risk. Examples of life-threatening events included bombs exploding in the vicinity of their classrooms or apartments, sniper bullets flying over their heads, bomb shrapnel missing them by a few inches, being caught in the cross fire, being kidnapped at gun-point, and being beaten up by militiamen.

By and large, the group's direct exposure to the war trauma was sparse, which prevented a long-term stress reaction. This is attributed to two major determinants: (1) the Lebanese war was of a "high lethality, low intensity" nature (Pattison, 1984, p. 35), and it developed an intermittent, albeit lengthy pattern, which allowed civilians ample time to regain sanity, refuel energy, renew hopes, and resume various activities, thereby mollifying the morbid effects of preceding violent episodes; and (2) the AUB campus was a pleasant environment with tight security, which provided students with a safe haven and a semblance of order in the midst of the chaos of Beirut.

The interviewees had favorable, albeit not always consistent academic records. Disruptions caused by the war were largely viewed as matters of perception and one's ability to withstand pressure and to function under extreme conditions. Sporadic problems with academic performance were attributed to lack of motivation, difficulties of concentration, frustration with the lingering war, faculty and staff who were inaccessible, rigid, or insensitive to students' needs, and the reportedly declining academic standards of AUB. Three subjects vehemently criticized exams and the grading system as unjustifiably harsh and not reflective of the students' grasp of the materials and their academic abilities. With the exception of one person, whose academic trajectory was reportedly rough and marred by disparaging conflicts with a number of professors, the interviewees had favorable perceptions of their programs and faculty. More often than not, the group was forced to study under less than opti-

mal conditions, largely caused by frequent power outages or curfews. Rana, for example, in her first year of medical school, used to hold a candle in one hand, a skull in the other, and follow the explanation from her anatomy textbook. Although at times (once a semester on the average) students were forced to study in shelters or corridors, due to sudden exchanges of heavy artillery in adjacent neighborhoods, and occasionally benefitted from a postponed exam or an extended summer break, most of the group felt that the war did not otherwise interfere with their academic pursuit. One third of the group perceived their academic life as "literally undisturbed by the war." If academic achievement is any indication of the students' adjustment, suffice it to say that the entire group graduated from AUB and went on for advanced academic training in medicine and various disciplines in Lebanon and the United States.

Socially, the interviewees regularly participated in extracurricular activities. They watched movies at the Ciné club, attended classical music concerts at the college chapel, played sports, went to parties, organized variety shows, or just hung out with friends in West Hall, the student center. Though most of the group criticized social activities on campus as uneven, poorly organized, insufficiently budgeted, and heavily politicized, they were overly grateful for the availability of these activities in an environment that otherwise offered little else to do. The purest and most enduring legacy of their AUB experience was the close friendships that the group cultivated with fellow students and colleagues.

The active social life of AUB helped keep the morale of most students relatively high. Despite scattered intervals of sadness, even mourning, which peaked with the multitude of tragedies in the summer of 1985, AUB students seemed to be concerned with nothing less than "guys trying to impress girls and girls trying to impress guys," even going to great lengths in dressing very nicely, "having, fun, laughing, singing while other people [were] getting killed just a few feet away." From one interviewee's vantage point, the morale at AUB was even "more relaxed than at any other campus in the world."

Throughout their college years, the group enjoyed strong support networks of friends and family, deeply valued their nuclear and extended families, sought strength and comfort in religion—though they did not practice their faith consistently—and some experienced a stronger belief in the existence of God and a renewed interest in religious worship.

Social and moral support cannot be underestimated during extreme conditions. There is a consensus that a strong social network plays a critical role as a stress-buffering variable, particularly in reaction to war stress (Solomon et al., 1986). In addition, kinship, a critical feature of the Arab culture, is an unwavering source of emotional support, help,

and advice in moments of hardships and provides a sense of identity, belonging, acceptance, and solidarity (Patai, 1973; Saleh, 1986). Furthermore, if one subscribes to the notion that faith in Arab culture empowers its constituents and nurtures attitudes of fatalism, whereby one accepts hardships without challenging their existence, and accepts the fact that one does not possess free will over destiny (Moracco, 1983; Patai, 1973), one can understand that religious faith may have had a positive effect on coping in that it provided a sense of confidence, assurance, and serenity in the face of negative events, which made adjustment to the war smoother.

Fifteen members of the group remembered harboring feelings of sadness, at times bordering on "depression," in regard to the war, which they attributed to the deterioration of several aspects of life in Lebanon, including inflation, brain drain, death of innocent civilians, abuse and injury of friends and colleagues, kidnapping of faculty, tentativeness of plans, precarious existence, and, finally, limited social opportunities, which forced the group into frequent sequestration.

Being exposed to the indiscriminate and unpredictable danger of a car bomb was found by the group as the single most stressful and anxiety-provoking aspect of living in Lebanon. Five interviewees reported becoming paranoid on the streets at some point because of the increased frequency of car bombs, prompting some to refrain from leaning against cars for fear they might be rigged to explode. Shelling, particularly at close range, was reported as the second leading cause of anxiety in the group. Whereas Osama found shelling "interesting," because, in his words, "it would not hit me," and Kawkab welcomed it as "happy news," especially before exams, Mona would sleep the entire night pressing her hands against her ears till they were swollen, and Ziad would find himself "dizzy with panic." Inadequate utilities, such as constant rationing of electricity and water and inept phone communications, were deemed as a source of frustration and inconvenience that for these students had become banal and part of daily life.

The predominant feeling of the group was one of helplessness during the conflict, because it was "dragging and dragging" and there was "nothing you could do" and "a little younger element of the population was being victimized." However, the group still managed to keep its hopes high, because "the war was ever changing from one place to another, one group to another, which gives you . . . dynamism," and because the "conflict would not last forever," or merely because of some members' assurance of going to the United States after graduation.

The group members engaged in relatively similar coping strategies and possessed personality traits that contributed to their adaptation to

war stress. Foremost of these coping strategies were denial, rationalization, and intellectualization, which are emotion-focused coping responses that shield the individual from anxiety and palliate the effect of stress. The interviewees reported having suppressed anxiety on numerous stressful occasions, particularly through denial, so that they could perform a specific task or carry on normally with their lives. The literature suggests that denial is commonly used in the coping process, particularly at the outset of a major stressful event, and is considered an adaptive coping response. The resistance of Moustafa to leaving his room in the dormitory when shelling intensified in order to avoid the discomfort of the shelter, and the obligation of Rima to complete floor rounds and attend to the needs of those patients whose rooms were fully exposed to snipers' bullets must have involved a refusal to reckon with the impending danger and a numbness of emotional reaction despite having a clear sense of what was happening. However, denial decreases with time as individuals become more equipped emotionally to deal with the experience and to plan their activities and behaviors accordingly (Janoff-Bulman & Timko, 1987). Although many subjects believed having used denial consistently during their AUB years, it is unlikely that any of them had insulated themselves from the outside war in Lebanon for a long period of time. If denial existed, it must have been situational, short-lived, and infrequent.

On the other hand, rationalization is a defense mechanism that seems to have been more frequently used by the group in perilous situations. The rationalization process in which AUB students continuously engaged is similar to the rationalization patterns described by Friedman (1989): playing "mind games" and perceiving the environment selectively. Hani's calculating the odds of being injured or hit by random bullets is very indicative of how simple mind games can be a driving force to keep anxiety in check without removing the danger that causes it. Moustafa, Zeina, and Rana attended medical classes assiduously when the college was shut down and the capital was on fire. They blocked out reality because they could not exercise any control over their environment and selectively focused on those aspects of the environment where they could wield some power: finishing their program. Rationalization was used in concert with another defense mechanism, intellectualization. Hanine blocked her feelings of hurt and anger when her boyfriend was severely injured as a result of a "stupid skirmish" at a checkpoint. By intellectualizing the incident, i.e., removing her feelings from the anxiety-provoking event, she was able to view her boyfriend's subsequent disability with a surprising degree of detachment, so that her academic pursuit and fulfillment of her goals would not be compromised.

Eighteen interviewees summed up their overall AUB experience with positive terms ("good," "normal," "enriching," "valuable") and superlatives ("would do it again," "loved it," "despite everything, great!"). They reported having received a good education, "loved the challenge," "met interesting people," made great friends, and "achieved their goals." On the other hand, two alumni viewed their experience as less than rewarding. "It wasn't negative, it was a moderate experience tinted by severe moments of negativity . . . desperation, self-loathing, self-doubt, seeking a way out," reflected one student. The second person's experience seems rather devastating: "I finished with the highest grades in high school, I entered [AUB] with such a blast, and everything was completely shattered: they managed to kill everything in me." Both these interviewees blamed the "culture," "people's attitude," "the whole system!" The group's perceptions of long-term effects of the AUB experience on their lives were multifaceted and combined both negative and positive attributes.

For the most part, the effects of the AUB experience were favorable and encompassed the following gains: Learning to be more patient, tolerant, and understanding; working more diligently, keeping abreast of political events; becoming more sensitive to issues of human rights; coping more successfully with stress, becoming empowered, more mature, and more in touch with one's emotions; and, finally, becoming high achievers both academically and professionally. As for the negative effects, the group reported becoming more intense, experiencing difficulties concentrating, and harboring feelings of anger and frustration brought forth by the injustices and devastation of the war. One female described herself as having emerged from the war emotionally deficient and was convinced that her intellectual and social development did not follow parallel or equal courses due to her limited social and affective experiences. Ziad's experience left him "scathed and marked." Upon graduation, he questioned his intellectual abilities, education and knowledge, because he had been constantly "consumed by small worries and large pains." Two alumni felt that the war had no impact on their lives. Osama emphasized, "I was never bothered by the war. I did not know anything other than the war, it was always like that . . . I'm indifferent to the war!" Moustafa's position was, "we had bad times and a lot of war situations we had to cope with, but I think after graduation there is no major terrible memory that we kept from the war: I don't have a friend who was killed [and I] myself [was not] injured".

The interviewees possessed certain personality traits that facilitated their adaptation and ability to cope with prolonged hostilities. By virtue of being college students, interviewees possessed a certain intellectual level that enabled them to engage in sophisticated mental activities, such

as generating creative solutions to problems, tolerating the complex task of decision making, and maintaining a high level of functioning.

Personality traits were found to influence behavior and adaptation during extreme conditions. Males and females in the group reported similar personality traits, namely, being cool-tempered, sociable, optimistic, resilient, in control, adaptable, patient, unwavering, forgetful, resourceful, indifferent, and humorous. These traits played a key role in helping these students withstand stress with minor repercussion on their mental health. This is consistent with studies that found a correlation between such personality variables as optimism, resilience, keeping busy, and adaptive coping (Dimsdale, 1978; Hobfoll, London, & Orr, 1988; Kaffman, 1977; Rachman, 1990; Sigal, Weinfeld, & Eaton, 1985). The interviewees' personality traits reflect to a certain extent some of the cultural aspects of the Arab character and the societal expectations to conform. Being brave and tough in the face of grief and strain, being resilient, patient, in control, and tolerating as much stress and pain as possible are integral aspects of the experience of the Lebanese people, who are so accustomed to hardships brought forth by persecution, repeated invasions, and prolonged occupations. The interviewees, particularly the males, frequently described the pressures imposed on them by family and peers to act according to certain prescribed cultural patterns: "Toughen things up," "do the man thing," for fear of being labeled "weak" or "not in control." The group's personality traits also reflect the sense of warmth, ebullience, acceptance, and hope prevalent in the Lebanese character, as captured by Pattison (1984): "[The Lebanese] are emotive and expressive—both men and women. They have intense feelings expressed openly and directly. . . . They enjoy life as it is given in the moment and scheme to survive" (p. 32). Perhaps these cultural variables, coupled with the relative security that the AUB campus provided, had an impact on the ebullient and cheerful morale that was reported by most interviewees.

Just as certain personality traits foster effective adaptation to extreme conditions, other traits are detrimental to the individual and produce maladaptive coping. Being emotional, indecisive, angry, withdrawing, and nervous were cited as factors that interfered with adaptive coping. However, it is clear that those negative traits were offset by the more positive, more adaptive personality characteristics that most of the group members possessed. Hence, most alumni were not crippled by their vulnerabilities, and these maladaptive traits did not cause adverse effects on their mental health, their social life, or their academic pursuits. The fact that the war left only one interviewee "emotionally scathed" appears to have been caused by certain of his character predispositions. He was reportedly sensitive, artistic, in constant pursuit of perfectionism, and in relentless search for aesthetics. Such traits predisposed him to be more

vulnerable than the rest of the group to the brutality of the war and the ugliness that it had spawned. The extent to which the war psychologically scarred him is worth investigating in a more scientifically rigorous fashion, but the nature and scope of this study do not lend themselves to such an analysis. However, it is worth noting that, just like the other members of the group, he was capable academically, participated vehemently and passionately in extracurricular activities, socialized frequently, completed his studies within the prescribed time limit, and pursued graduate work with dedication and success. Such positive realities argue more convincingly for a normal, adjusted life than for maladaptive coping and psychological impairment. Furthermore, Ahmad's devastating overall AUB experience was not akin to his vulnerability to the war; rather, it was prompted by the unsupportive academic environment where his skills, interests, and strengths were neither appreciated nor fully applied. His resulting discouragement and low self-esteem are often encountered by students when there is no adequate fit with their environment (Dunker-Schetter & Lobel, 1990).

In summary, this study examined coping with war stress from a student's perspective. Findings suggest that students perceived their experience as relatively comparable to any academic experience in a more stable environment, and such factors as the intermittent nature of the war, campus safety, socioeconomic status, intensity and length of exposure to life-threatening events, adaptive defense mechanisms and personality traits, role of religion, and, finally, strong support networks of friends and family were found to play a critical role in helping students cope more effectively with the war.

The study has limitations inherent in the subjectivity of questions and verbal probes of the investigator, in the group's responses, which necessitated extensive recall of past experiences subject to being conditioned by passage of time and life in the United States, and, finally, in the potentially unrepresentative nature of the sample. It would be worth investigating the coping patterns of students over time to study the long-term effect of the war and potential delayed reaction to war stress.

Notes

¹See Oweini, 1994 for a more detailed profile of the interviewees and the questionnaire.

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Testing a Model of Intraorganizational Power Within Liberal Arts College Libraries

Introduction

Computers and information technologies have had profound effects both upon the lives of individuals and upon organizations. They have changed the way we work, live, and play. These technologies have also facilitated the reorganization of organizational structures, changed their inputs and outputs, and even challenged the existence of some organizations. Internal and external procedures have developed to cope with these effects, often altering an organization's power dynamics.

By employing a wide variety of information technologies, academic institutions have changed the ways faculty and students teach, learn, and do research. At the same time, information technologies have given libraries the ability to provide greater access to a broader array of materials. These technologies, however, have also presented greater challenges to libraries. The costs of purchasing, maintaining, and replacing computer equipment, the hiring of computer experts or consultants, the training of librarians, library staff, and library patrons to use the technologies, and the acquisition of electronic databases has stretched the budgets of libraries greatly. Although many early proponents of automation believed that automation would pay for itself through reductions in cataloging and clerical staff (e.g., Allen, 1986), such reductions, if they materialize at all, have been quickly absorbed by increased costs in other areas of the library.

Competing for funds on campus, especially for the purchase of computing equipment, has become a great challenge for most libraries.

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Tomer (1992, p. 77) aptly writes, "As many librarians have discovered in recent years, waxing lyrical about the virtues of the online public access catalog or the full-text database is one matter, but finding the money to finance the servers, terminals, printers, and licenses to support this mode of delivery is another." As a result of his survey of chief academic officers (CAOs) and the directors of libraries which were members of the Association of Research Libraries, Hughes (1992) reports that the development of the electronic library is not one of the highest priority issues for funding among campus administrators. Both the CAOs and the library directors agree that the budget is the most pressing issue.

As a result of the importance of the budget, van der Linde (1990) argues that the academic library is imbedded in a network of power struggles and that the library director should not be a passive recipient of power but should actively pursue it. Tolbert (1985), in her examination of patterns in administrative offices in public and private institutions of higher education, found that the sources of monetary support are a major factor in determining the structure of administrative offices.

In the competition for funds, computing and electronic information technologies may cause changes in certain power payoffs or "power shifts" both within and between organizations (Kraemer & Dutton, 1982; Toffler, 1990). These power shifts may alter the political atmosphere of an organization, resulting in changes in the distribution of institutional resources. Although his focus was on business organizations, Petrozzo (1995, p. 17) states that "information technology is intertwined with almost all corporate initiatives." He argues that information technology organizations, of which libraries are one, are facing changing customers and changing roles with the emphasis being on the ability to enable organizations to do things they could not previously do.

This study examines the role that electronic information technologies have played in the distribution of power within organizations, specifically the power of the library within the liberal arts college. Based largely on the strategic contingencies theory of intraorganizational power, power is considered a dependent variable that changes in response to a subunit's bases of power. The bases of power include the subunit's ability to cope with uncertainty, its substitutability, and its centrality to the organization (Hickson, Hinings, Lee, Schneck, & Pennings, 1971; Lachman, 1989; Salancik & Pfeffer, 1977). A strategic contingency is defined as "a requirement of the activities of one subunit which is affected by the activities of another subunit" (Hickson, et al., p. 222). Information can be considered one such strategic contingency. As developed by Hickson et al., the strategic contingencies theory states that the control of contingencies, such as information, needed by other subunits,

such as faculty and students, within the organization increases the power of the controlling subunit. The more necessary these contingencies are for the work of other subunits, the more power accrues to the controlling subunit. In addition, this study also incorporates the idea that information technology is a change agent within organizations, as presented in the management information systems literature (e.g., Saunders, 1981; Saunders & Scamell, 1986).

Methodology

The model of intraorganizational power tested in this study seeks to integrate the strategic contingencies model of intraorganizational power with concepts drawn from the literature of the effects of technology on organizations. Figure 1 presents the theoretical model. The dependent variable is subunit power. The major independent variables are technology and the environment. The intervening variables are the bases of power.

One overarching research question guided the development of the model tested in this research: how does the control of library-related information technologies affect the library's power within the liberal arts college? The major research hypothesis can be stated as follows:

As the amount of information technologies within a subunit of an organization changes, the bases of power of the subunit within the organization change, and as the bases of power within a subunit of an organization change, the power of the subunit within the organization changes.

The overall null hypothesis states that as the number of information technologies within an organizational subunit changes, no other changes occur other than those resulting from randomness.

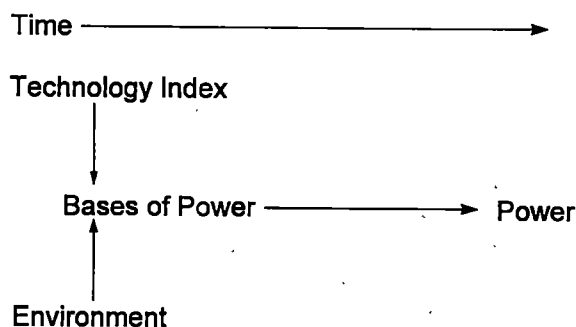


FIG. 1. Tested Model

In brief, the model states that as technology within the subunit changes over time, the bases of power react to those changes in technology and as the bases of power change, the power of the subunit changes. As a result, the manifestations of power, as revealed by resource allocations, also change.

For this research, information technology is the major independent variable. According to the model developed by Saunders (1981) and Saunders and Scamell (1986) in their studies of management information systems (MIS), as MIS usage increases, the power of the subunit that controls the MIS also increases due to the increase in that unit's centrality (called pervasiveness by Saunders), its ability to cope with uncertainty, and its nonsubstitutability. Similarly, Pettigrew (1972) and Pfeffer and Leblebici (1977) argue that information access and the control of information technologies are power resources. Various authors within the library literature have also shown that automation is a change agent within libraries (e.g., Moran, 1989; Cartee, 1990; Gorman, 1987; Johnson, 1991; Pungitore, 1986).

The technology index used in this study was developed from existing measures and various data sources for library automation (Pungitore, 1986; Sitts, 1987; Duval & Main, 1992). The functions included in the index were automated acquisitions, automated serials, automated cataloging, automated circulation, online public access catalog, network utility membership (OCLC, RLIN, WLN, etc.), network-based interlibrary loan, local area network within library, node on campus network, local/regional consortia or networks, telefacsimile, public computing work stations, cd-rom indices, reference data base searching, and librarian/staff work stations. The technology index measured the change in the number of functions and services that the library had automated over the time span studied.

As operationalized in this research, the dependent variable, power, was specifically concerned with obtaining resources for use within a subunit (the library) of an organization (the liberal arts college) and with the perception of power. Resources were defined in terms of money, as indicated by changes in subunit budget allocations, and personnel, as indicated by changes in the number of subunit staff. In addition, the perception of changes in power was also examined. In the tested model, power was measured in three different ways to satisfy Pfeffer's (1977) recommendation that multiple measures of power be used in order to understand the concept more completely. Two of the measures, change in the percentage of the institutional educational and general (E&G) budget allocated to the library and change in the total number of personnel within the library, were unobtrusive and were drawn from archival data. The

third measure was perceptual and reported the respondents' own views of the change in their own power that was caused by library automation.

In most colleges and universities, ultimate power, as indicated by budget allocations, rests with those who allocate funds, and such power may be constrained by fiscal and legal mandates. It is assumed that budgetary decisions can be influenced by the structure and power bases of the institution (Bates, 1970; Allen, Madison, Porter, Renwick, & Mayes, 1979). Although the processes used for influencing such decisions were not a primary focus of this study, their involvement can be understood to be operating within the processes that cause changes in intraorganizational power.

The bases of power included both structural variables and variables drawn from the strategic contingencies theory of organizational power (Hackman, 1985; Hickson et al., 1971; Pfeffer, 1977, 1978, 1981; Salancik & Pfeffer, 1977; Saunders, 1981, 1990). Because power is first and foremost a structural phenomenon, two structural variables representing change in the number of professional staff (i.e., the librarians) and change in the number of other staff (i.e., support staff, paraprofessionals, and clerical workers but excluding student employees) were used to determine their changes in response to changes in technology (Astley & Sachdeva, 1984; Caufield, 1989; Hinings, Hickson, Pennings, & Schneck, 1974; Pfeffer, 1981).

The other bases of power variables were drawn from the strategic contingencies theory of intraorganizational power: coping with uncertainty, centrality, and substitutability. Uncertainty can be defined as "a lack of information about future events, so that alternatives and their outcomes are unpredictable" (Hickson et al., 1971, p. 219). Such uncertainties can involve the sources and composition of inputs, the work flow or production process, and the market for products. To survive, organizations must cope with these uncertainties in an effective manner. For this research coping with uncertainty was defined as direct involvement within the work flow of the organization. For an academic institution, this was interpreted to mean the provision of information, especially that related to research and courses. Two coping with uncertainty measures were included: change in the circulation of library materials (measured as change in circulation per library staff member) and change in the direct provision of information or instruction in using information resources (measured as change in the number of reference transactions).

Hickson et al. (1971, p. 221) defined centrality of a subunit as "the degree to which its activities are interlinked into the system." In her research on colleges and universities, Hackman (1985) defined centrality as how closely a unit matches the central mission of its parent institution

and found that a unit's centrality crucially affects the internal resources allocated to it by the institution. Similarly, Hall (1970, p. 50) stated that from his observations at a number of universities, "the centrality of the operation and the scarcity of personnel are major determinants of the power of a particular organizational unit." In her research on centrality and the academic library, Grimes (1993) used the notion of centrality to the attainment of the university's goals as embodied in the metaphor of the library as the "heart of the university." In this research, centrality examined the ability of the library to support the primary educational mission of the college and was measured as the perceived change in centrality of the library as a result of library automation.

The final factor included in the contingency theory of power is that of substitutability, although some researchers use the term nonsubstitutability. Hickson et al. (1971, p. 221) defined this term as "the ability of the organization to obtain alternative performance for the activities of a subunit." In other words, substitutability measures the degree to which the functions of one subunit can be taken over by another subunit within the same organization. Dubin (1963) notes that power within a formal organization is based on the importance of the functions performed by the subunit and the exclusiveness with which it performs them. The less that the activities of one subunit can be taken over by another, the greater that subunit's power. For this research, substitutability referred to the ability of other campus subunits to perform functions similar to those performed by the library. Three substitutability variables were included in the model: the ability of other subunits, e.g., the computer center, to perform the library's information functions; the difficulty in hiring technologically qualified librarians; and the collection development responsibility of librarians.

The environmental variables provide a way to account for influences on the power of the library that lie outside the theories used to construct the integrated model. According to Kim and Shin (1977), the size of the user population and the size of the library collection are important environmental variables that must be considered in studies of libraries. The environmental variables included in the tested model were change in potential demand for service (i.e., change in the number of students, the largest potential user group of an academic library) and changes in collection size as measured by changes in the total title count and the number of periodical subscriptions.

Finally, the model posited that time must be considered in studies of the influence of technology on organizations. The study was longitudinal so that the effects of technology could appear both within the bases of power and within the power measures themselves. As Kraemer and

Dutton (1982) stress, computing generally supports the status quo, at least in the short run. Thus, time may need to elapse before significant changes can take place and be measured, especially in academic institutions, which are often bound by tradition and resistant to change. Most of the variables in the model were measured at two times (Time1 = 1981–82 academic year and Time2 = 1989–90 academic year) to examine changes occurring over this time span, although a few variables measured perceptions of change over the time period using only one measure. These two dates provided a basis for studying the changes in libraries during the decade of the 1980s, a period in which great strides were taken in library automation. Online catalogs and circulation systems became common, CD-ROMs began to be used extensively, internal networking capabilities increased as lower priced microcomputers were introduced into academic institutions, and external networks such as Bitnet and the Internet became more readily accessible. Of course, since the time frame of this study, computing capabilities and electronic networks have increased greatly in liberal arts college libraries.

The unit of analysis for this study was the library within the liberal arts college. The population frame consisted of all those colleges classified as Liberal Arts Colleges I or Liberal Arts Colleges II by the Carnegie Foundation for the Advancement of Teaching (1987). Only those colleges that completed both the 1982 Higher Education General Information Survey (HEGIS) and the 1990 Integrated Postsecondary Educational Data System (IPEDS) surveys and that were not part of a multilibrary reporting group were included in the study. The final total population frame for this study was 487 academic libraries from colleges classified as Liberal Arts I and Liberal Arts II.

The liberal arts college was chosen for several reasons. Due to the size of such institutions, structural changes within the organization and changes in the bases of power as a result of technology should be more readily apparent here than in larger libraries, which are more organizationally complex. The staffs of most liberal arts college libraries are small, and library computing must often be integrated into the work of existing staff members (Crawford, 1991; Martin, 1988).

The sources of data included a mailed questionnaire and archival data. The questionnaire sought data for the following variables: amount of library automation (technology index), perceived change in power, perceived change in centrality, and perceived change in substitutability of functions, personnel, and collection development responsibility. Seven-point Likert scales were used for perceived change in power, perceived change in centrality, and perceived change in substitutability (three measures). A coin flip decided whether each question stressed an increase or

a decrease in the variable under consideration. For the technology index, a list of technologies was presented and respondents indicated when each technology was made available in their libraries. A pretest of the survey instrument was performed in ten college libraries. The instrument required only slight wording changes as a result of the pretest. Thus, data gathered from the pretest were incorporated into the study.

After pretesting, the questionnaire was sent to the directors of the 487 identified libraries, except those directors who participated in the pretest. If the questionnaire was not returned within eight weeks, another copy was sent by mail. All respondents were offered a summary of the completed research. Responses were received from a total of 428 institutions (87.9% return). Of those questionnaires that were returned unanswered, five colleges had closed, two reported that they no longer considered themselves liberal arts colleges, three reported a lack of time to complete the survey, one was returned with no explanation, and one was returned with the explanation that the survey could not be completed because the library had no automation during the particular times studied. Thus, the total usable return to the first survey was 416 (85.4%).

The HEGIS and the IPEDS surveys provided data for the following variables for both Time1 and Time2: library budget as percent of institutional general and educational budget, number of positions, potential demand for service (size), collection size (title and subscription counts), classification of personnel (professional and other), and circulation and reference transactions.

For this study, only libraries whose data were complete for all measured variables were included in the final analyses. As a result, data from 256 libraries (52.6%) were included in the analyses.

Analyses were performed using Amos software available from SPSS (Arbuckle, 1997). Amos provides a method of performing structural modeling using a graphical interface. The first analysis included the technology index as the major independent variable, and the second used both the technology index and the environmental variables as independent variables with the bases of power being the dependent variables. The third analysis used the bases of power variables as independent variables and the power variables as dependent variables. Finally, a test of the overall model was conducted in which the technology index and environmental variables served as the independent variables, the bases of power (structural variables, coping with uncertainty variables, a centrality variable, and substitutability variables) were used as intervening variables, and the power variables were the overall dependent variables. Table 1 provides descriptive statistics for the variables included in the study.

TABLE 1
Descriptive Statistics of Variables in the Tested Model

Variable	Mean	Std Dev	Minimum	Maximum	N
Technology Index	5.47	2.75	0.00	14.00	252
Change in professionals	0.20	0.52	-1.00	4.00	252
Change in other staff	0.33	1.22	-1.00	12.08	252
Change in circulation	-0.12	1.66	-0.89	24.54	252
Change in reference	0.88	2.60	-1.00	21.20	252
Centrality	4.83	1.45	1.00	7.00	252
Substitutability of functions	3.02	1.87	1.00	7.00	252
Substitutability of personnel	3.46	1.60	1.00	7.00	252
Substitutability of collection development	2.34	1.39	1.00	7.00	252
Change in number of titles	0.19	0.45	-0.50	5.11	252
Change in subscriptions	0.62	4.87	-0.63	72.49	252
Change in number of students	0.25	0.50	-0.42	3.81	252
Power (perceived)	5.29	1.50	1.00	7.00	252
Change in budget percentage	-0.17	0.28	-0.81	1.57	252
Change in number of staff	0.17	0.40	-0.66	3.42	252

Results

To test the research hypothesis, several separate analyses were performed. Amos uses a very stringent test of statistical significance. In addition, analyses which use larger sample sizes do not often yield statistically significant results. As a result of these two parameters, none of the structural analyses produced significant results, i.e., the chi-square test for the null hypothesis indicated that the tested model did not differ significantly from what would be expected by chance. Amos, however, also reports another statistic ($cmin/df$, where $cmin = \chi^2$) which can be used to determine the level of fit of the data to the proposed model. The rule of thumb for the measure of fit is that it should be less than 5, and preferably in the range of 2 to 1 or 3 to 1 (Arbuckle, 1997, p. 555). In several of these cases, the analyses did yield useful results (no statistical significance is associated with these fit measures).

The first analysis sought to determine the strength of the relationship between the technology index by itself and the bases of power variables, i.e., that technology is a force of change in the bases of power of organizations. The initial results indicated no statistical significance ($\chi^2 = 56.967$, $df = 27$, $p = 0.001$). The measure of fit, however, showed that the proposed model does represent the data well ($cmin/df = 2.110$), indicating that technology was a change agent for the bases of power variables.

The environmental variables were added to the preceding analysis to determine their effects in conjunction with the technology index upon the bases of power. The chi-square statistics were not significant ($\chi^2 = 108.942$, $df = 54$, $p = 0.000$), but the measure of fit was slightly better than for the technology index alone ($cmin/df = 2.017$), showing that the addition of the environmental variable resulted in a better model of the overall effects on the bases of power than did the technology index alone.

The next step of the analysis examined the influence of the bases of power on power itself, i.e., the core of the strategic contingencies of intraorganizational power theory. This analysis used the eight bases of power variables and the 3 power variables. Neither the test against the null hypothesis ($\chi^2 = 472.639$, $df = 44$, $p = 0.000$) nor the measure of fit ($cmin/df = 10.742$) supported this section of the model.

The final step in the analysis examined the model as a whole, rather than examining its constituent parts. Again, the analyses failed to provide significant results ($\chi^2 = 563.057$, $df = 90$, $p = 0.000$; $cmin/df = 6.256$), although the measure of fit approached the level of meaningfulness.

These results stand in contrast to those provided in other research using a similar, yet larger, data set and a different analytical technique (canonical correlation) (Crawford, 1997; Crawford & Rice, 1997). In both Crawford (1997) and Crawford and Rice (1997), library automation was shown to affect both the bases of power variables and power itself. In those studies, the strongest relationship was between the bases of power and power, affirming the strategic contingencies theory. The results from this study, in contrast, contradict the earlier results. This may be due to the statistical tests employed or to a different set of data.

Discussion

The results of these analyses show that technology can be thought of as a change agent, but not to the extent often portrayed in the literature of higher education and librarianship. In essence, libraries and academic institutions are changing, but technology, although of great importance, may not be the single driving force behind those changes. This study shows that the strongest relationship is between technology and the bases of power. The importance of the relationship between the bases of power and power itself, however, was not supported by this research.

This research does raise several issues. The first and most important issue is seen in the descriptive statistics. Of greatest concern is the change in the budget allocated to the library. This variable was measured

as the change in the percentage of the college's E&G budget represented by the library budget. Over the time span studied, the percentage of the budget assigned to the library declined by 17%. In reality, most library budgets did grow in terms of the total amount of money available to the library, but as a share of the institution's overall budget, it declined dramatically. The number of students at these colleges increased by 25% over the same time, and the total number of staff increased by 17%. Also during this time, library computing became a major drain on budgets. Thus, less money was available for the purchase of materials and the provision of services.

What do these trends bode for libraries? As computing becomes more important both to colleges and to libraries and as academic institutions expand their reach to new clients through the web and other distance education technologies, it will become increasingly difficult for libraries to provide the information infrastructure necessary for an optimal level of service. Questions on the importance of local print collections, the value of librarians, the need for archival materials, and the role of the library will be raised and will need to be answered. The most important question, however, will be, How can the library effectively serve its clientele in an ever-changing information environment? The answer to this question will continue to challenge librarians and academic administrators for the foreseeable future.

Limitations

This research has several limitations. First, the study was conducted using data from only one type of academic institution, the liberal arts college. As a result, the findings may not be generalizable to other types of academic libraries or to other types of libraries, because liberal arts colleges vary from other academic institutions in a variety of ways, such as size, mission, and curriculum. If similar data from other types of libraries, especially ARL libraries, were included, the results could be vastly different.

Second, the time span used as the basis of the study may not have been long enough to determine changes caused by automation, although the time period studied was one of great changes in computers and in library automation. Of greatest importance is the continuing changes as a result of the interconnectivity of campus systems and the growth of the Internet. Such changes may have become manifest after the time period of the study.

The underlying economic conditions of the institutions included in the study, for example, endowments, grants, enrollments, and so on, may

have affected the results of the study, especially the change in budget percentage and change in staff power variables.

Finally, much of the research upon which the tested model was built was drawn from the literature of business administration and management information systems. The conclusions of such research that information technologies have acted as change agents within organizations, especially businesses, may not be applicable to academic libraries, especially to liberal arts college libraries. The organizational politics surrounding business information systems may differ significantly from the politics of a liberal arts college. In addition, the purposes of the automation vary between businesses with an emphasis on productivity and libraries with an emphasis on access to information.

As with any research, other exogenous variables not included in the tested model may have caused any changes that were identified. Variables that examine the economic condition of the colleges and the leadership styles of college administrators and head librarians may have the greatest influence on the library's power within such institutions and should be included in other research that examines power in higher education (Zanzi, 1989).

Conclusion

The relationship between computing and power within higher education has become a very important issue, especially as computing and telecommunications have become increasingly important to the functioning of the institution. To understand this relationship more fully, the present research sought to test a model of the library's power within liberal arts colleges. The model stated that library automation changes the bases of power and that the bases of power, in turn, affect the power of the library within the college. As Kraemer and King (1986, p. 492) have said, "The fundamental question about computing and organizational politics is who gains and who loses from computing." To explore the processes of change set in motion by automation, this study proposed and tested a theoretical model of intraorganizational power based largely upon the strategic contingencies theory of intraorganizational power. The strategic contingencies theory states that power within an organization can be viewed as a function of a subunit's ability to cope with uncertainty, its centrality to the organization, and the substitutability of its functions and personnel within the organization. The model used in this research added organizational structural and environmental variables to provide a more explanatory model of intraorganizational power for libraries within liberal arts colleges.

The main idea expressed in the model was that as automation within a

library changed, the bases of power of that library changed, resulting in changes in the actual and perceived power of the library on campus. The model also posited the idea that time is an important factor in understanding the workings of automation as a change agent.

The study provided generally negative results, with only one analysis providing support to the tested model. The analyses showed that automation had direct, but limited, effects on the bases of power variables, but that the environmental variables were also important factors in this relationship. In contrast to earlier studies that supported the strategic contingencies theory, the bases of power variables showed no significant relationships with the power variables. In addition, tests of the total model yielded no significant results.

Taken together, these results call into question the proposed model and beg the question on the relationship between technology and power. It is apparent that other factors must also be considered in the development of models of power within liberal arts colleges. Different models of technology as an agent of change must also be developed and tested to delve more deeply into the effects that computing and other information technologies are having on academic institutions.

In contrast to the results revealed by the statistical analyses, the library directors who participated in this study agreed that automation had been a major help in providing them with increased power. They argued that library technology had increased the library's influence on campus; it had increased the status and prestige of the library; and it had been used as a marketing tool for the college. The analyses showed that automation did influence the bases of power, but it did not have a significant effect on power as delineated in the tested model. Technology, nonetheless, has been a boon to libraries, increasing access to a wide variety of information and easing the demands of many routine library tasks. The directors also agreed that automating a library should not be undertaken in hopes of increasing the library's influence on campus, but should be used to provide a better level of service to its stakeholders.

This research provided one way to examine the relationship between information technology and power. Other methods of inquiry should also be brought forward to study this phenomenon. The data presented in the study and the results generated by it can help to enlighten library directors and academic administrators to the state of the field and to provide insight into the effects that information technologies have had on libraries within the liberal arts college.

As Pfeffer (1981, p. 370) says, "Power and politics are often part of organizations, and need to be understood as fundamental and important processes." More research needs to be undertaken to increase our under-

standing of the relationship between technology and power within institutions of higher education.

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TA Teaching Effectiveness

The Impact of Training and Teaching Experience

As full-time faculty positions become less stable, graduate teaching assistants (TAs) will continue to increase their responsibilities in the instruction of undergraduate students. These increased responsibilities are most evident at large research universities, where full-time faculty have been drawn away from undergraduate instruction in order to teach graduate courses and fulfill increasing research demands (Boyer, 1991a, 1991b; Diamond & Gray, 1987; Stokely, 1987; C. J. Sykes, 1988). As a result, a great deal of responsibility for undergraduate instruction has been handed over to graduate teaching assistants. Generally, research assistantships offer better funding and more opportunities to work closely with faculty mentors. Therefore, the prestige of teaching assistantships becomes jeopardized as the best graduate students seek research assistantships so that they will gain the research skills and experiences necessary to become successful college faculty members. Sullivan (1991) describes this as "skimming the cream" off the top of each group of graduate students and diverting their talents away from teaching.

Faculty and administrators at research universities are the gatekeepers for successive generations of TAs, providing them with their primary training for college faculty positions. However, since socialization into the university research function has become the major focus of graduate assistantships in what C. J. Sykes (1988) refers to as "the historic escape from teaching (THEFT)," teaching becomes a secondary faculty pursuit. Faculty have little time to devote to mentoring their teaching assistants. Furthermore, little extra time exists in a TA's schedule to become social-

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ized thoroughly and effectively in the teaching function (Davis & Minnis, 1993). Therefore, graduates entering careers in higher education typically lack the training and experience necessary to perform their instructional duties (Boyer, 1991b).

In many instances, department chairs assign TAs with no training or teaching experience to teach undergraduate classes. In Bomotti's (1994) study nearly half of the TAs had attended no teacher preparation courses nor workshops. However, nearly three-fourths (73%) of these TAs expected to pursue a teaching career. In a national study of 240 graduate deans, Buerkel-Rothfuss and Gray (1991) revealed that very few institutions (26%) offered some form of university-wide TA training, while approximately 56% offered some type of training at the departmental level. In a more recent national study of 65 research universities, Butler, Laumer, and Moore (1993) found that nearly 70% of the TAs were provided with some type of formal training either at the university or department level.

In a national study of TAs, 53% indicated having received some form of training, but over 75% indicated that their training amounted to less than one week (Gray & Buerkel-Rothfuss, 1991). The majority of such training efforts are limited to one day or less usually at the beginning of the term or semester (Buerkel-Rothfuss & Gray, 1991; Ronkowski, 1989). Lack of training or ineffective training is often the case due to an incongruence among the following factors: When training should occur, who should conduct it, how long it should be, what it should include, whether native and international TAs should receive identical training, and how training should be evaluated (Weimer, Sviniki, & Bauer, 1989).

When formal TA training is offered, it is typically provided at the university or departmental levels. At the university level it typically deals more with university policy and procedures rather than effective instructional delivery techniques (Gray & Buerkel-Rothfuss, 1991). State mandates and university policies often force hurried and ineffective training. University training is usually limited to a one-day workshop, delivered primarily through workshop presentations by university faculty and administrators. Such training also tends to focus on resolving immediate classroom problems rather than emphasizing teacher training for long-range professional goals (Boyd, 1989).

The types of training offered by academic departments are even less clear, ranging from very brief general orientations to structured teaching practicums supervised by faculty mentors. Unfortunately, individual departments seldom offer specific TA training programs for various reasons. These include personnel and financial constraints, lack of commitment to teaching, beliefs that TAs do not need the training, and probable

lack of faculty willing and able to assist TAs (Holten & Nilson, 1990). A need for additional training, especially at the departmental level, has been consistently identified by TAs (Gray & Buerkel-Rothfuss, 1991; Moore, 1996; Worthen, 1992).

Without the necessary training, TAs must learn to teach from on-the-job experience. These experiences can provide TAs with valuable feedback from students and faculty members that would be useful in improving their teaching skills. Despite the research supporting the benefits of such experiences and feedback (Duba-Biedermann, 1991; Holten & Nilson, 1990; McKeachie, et al., 1980; Murray, 1987; Murray & Smith, 1989; Overall & Marsh, 1979; Slevin, 1992), most TAs are afforded limited opportunities to obtain feedback about their teaching and must learn how to teach on their own. Experience alone can be helpful. In general, TAs grow as they gain experience (Sprague & Nyquist, 1991). Those TAs with more experience have reported higher levels of self-efficacy toward teaching (Prieto & Altmaier, 1994) and have been rated as more effective by students (Briggs & Hofer, 1991; Davis, 1991; Ferris, 1991). However, there is still a need for mentorships that allow TAs to work closely with experienced faculty members and receive feedback on their teaching. When asked to make suggestions to improve training efforts, TAs have consistently recommended mentorship opportunities (Bomotti, 1994; Jones, 1993; Moore, 1996; Worthen, 1992).

One difficulty with mentorships, however, is the limited number of available faculty mentors who are willing to assist TAs, an endeavor that is very time consuming for both the TA and the faculty member. With additional time constraints imposed on faculty to "publish or perish," research-oriented faculty are encouraged to exert less energy toward the duty of teaching, much less the training of TAs. Generally, faculty are reluctant to expand their own teaching techniques beyond traditional lecture and rarely seek feedback about their own teaching (Guskin 1994; Shannon, Twale, & Hancock, 1996; Terenzini & Pascarella, 1994). Even though research has shown that methods other than lecture and discussion have proven effective in responding to student differences, faculty feel most comfortable using these methods in their classes (Terenzini & Pascarella, 1994). Therefore, in many disciplines, faculty have as much need as TAs for pedagogical training.

College of Education instructors tend to incorporate the greatest variety of all teaching and assessment methods into their courses, whereas instructors from science and math use the least variety (Shannon, Twale, & Hancock, 1996). This is understandable, given that many instructors in the College of Education have thorough pedagogical training and public-school teaching backgrounds and hopefully are consciously mod-

eling effective teaching to others. Faculty in all disciplines serve as models of both effective and ineffective teaching ability. If TAs tend to teach in a similar manner in which they were taught, differences in the teaching effectiveness of TAs may also depend on academic discipline.

Purpose of the Study

In general, there has been little research examining the effects of the typical training afforded to TAs. Previous reviews of research on TA training (Abbott, Wulff, & Szebo, 1989; Carroll, 1980) have called for more studies designed to assess the effectiveness of TA training programs. Therefore, one purpose of this study was to determine the impact that TA training had on undergraduate students' and corresponding TA self-perceptions of nine teaching effectiveness factors. Specifically, three types of TA training were examined. The types of training included (1) university TA training, (2) departmental TA training, and (3) an undergraduate degree in education. The first two types of training, university-wide and departmental, are most typically offered to TAs. Having an undergraduate degree in education is less common among TAs, but is far more comprehensive in terms of preparing one to teach.

A second purpose was to examine the influence of previous teaching experience on students' and corresponding TA self-perceptions of nine teaching effectiveness factors. Three types of experience were examined in this study. These included (1) previous TA experience, (2) college teaching experience, and (3) K-12 teaching experience. Previous TA experience was defined as any prior TA assignment for which the TA was independently teaching an undergraduate course. College teaching consisted of previous teaching experiences at community colleges and assignments as instructors at four-year colleges, but did not include prior TA assignments. Finally, K-12 teaching was defined as teaching experience in kindergarten through 12th grade classrooms.

A final purpose of this study was to determine the extent to which teaching effectiveness was influenced by academic discipline. Specifically, TAs from four colleges of study (Education, Engineering, Liberal Arts, and Science and Math) were compared on students' and corresponding TAs' self-perceptions of nine teaching effectiveness factors.

Method

Participants

In June 1994, the university employed approximately 624 graduate teaching assistants in 38 departments across campus. Of this number,

292 were identified as independently responsible for teaching at least one undergraduate class. The remainder did not have full responsibility for instruction or served mainly as lab assistants and, therefore, were not eligible for this study. Department heads were contacted, informed about the university sponsored study, and asked to involve their TAs in the survey. In the spring term 1994, 129 independently teaching graduate assistants representing 29 departments at a major southern research university participated in the study, resulting in a response rate of 44.2%.

Participating TAs represented six different colleges of study. These colleges included Business, Education, Engineering, Human Sciences, Liberal Arts, and Science and Math. In only one college did the response rate exceed 50%. The highest response rate resulted within the College of Science and Math (71.3%), whereas the lowest response rate occurred within the College of Business (20%). A comparison of the responding sample was made with the university-wide pool of TAs using a chi-square analysis. This analysis yielded a chi-square value of 26.231 ($p < 0.05$). Specifically, this analysis revealed that TAs from the College of Science and Math were overrepresented in the sample, whereas TAs from the colleges of Liberal Arts and Engineering failed to respond as much as expected. These response rates should be considered when generalizing the results from this study.

Table 1 summarizes the demographic characteristics of the sample of TAs in each of the six colleges of study. Overall, the majority of the responding TAs were male (63.5%) and working on their doctorate degree (53.5%). Fifty-seven percent of these TAs attended training sessions offered by the university, and 55% attended departmental training. Only 28 TAs (21.7%) reported having an undergraduate degree in education. There were 10 TAs who indicated having all 3 types of training. Of these, 6 were from the College of Education and the remaining four were from the College of Liberal Arts. On the other hand, 15 (22.4%) of the TAs from Science/Math indicated receiving no training. This sample of TAs had very limited teaching experience. In fact, 46 TAs (35.7%) reported having no teaching experience of any type. Seventy percent of these inexperienced TAs were from the colleges of Science/Math or Engineering.

Instrumentation

The instrument consisted of two parts. The first section, the demographic profile, requested information on TAs' academic college, gender, degree pursued, native language, teacher training and preparation

TABLE 1
Demographic Characteristics

	Business (n = 3)	Education (n = 16)	Engineering (n = 15)	Human Sciences (n = 4)	Liberal Arts (n = 24)	Science/Math (n = 67)
<i>Response Rate</i>	20%	48.5%	28.3%	40%	27.5%	71.3%
<i>Gender</i>						
Male	2 (66.7%)	9 (56.5%)	6 (40%)	1 (25%)	7 (29.2%)	57 (85.1%)
Female	1 (33.3%)	7 (43.8%)	9 (60%)	3 (75%)	17 (70.8%)	10 (14.9%)
<i>Degree Program</i>						
Master's	0 (0%)	5 (31.3%)	15 (100%)	0 (0%)	18 (75%)	22 (32.8%)
Doctoral	3 (100%)	11 (68.8%)	0 (0%)	4 (100%)	6 (25%)	45 (67.2%)
<i>Training</i>						
None	0 (0%)	1 (6%)	3 (20%)	0 (0%)	3 (12.5%)	15 (22.4%)
University training	2 (66.7%)	12 (75%)	10 (66.7%)	4 (100%)	15 (62.5%)	31 (46.5%)
Department training	1 (33.3%)	8 (50%)	2 (13.3%)	3 (75%)	19 (79.2%)	37 (55.3%)
Degree in education	0 (0%)	12 (75%)	2 (13.3%)	0 (0%)	8 (33.3%)	6 (9%)
<i>Experience</i>						
None	0 (0%)	4 (25%)	10 (66.7%)	2 (50%)	8 (33.3%)	22 (32.8%)
TA experience	3 (100%)	2 (12.5%)	3 (20%)	2 (50%)	10 (41.7%)	31 (46.3%)
College experience	2 (66.7%)	6 (37.5%)	3 (20%)	1 (25%)	4 (16.7%)	17 (25.4%)
K-12 experience	0 (0%)	12 (75%)	2 (13.3%)	0 (0%)	7 (29.2%)	1 (1.5%)

level, and types of teaching experience. Information from this section of the instrumentation provided the basis for determining the independent variables (i.e., training and experience) in this study.

Three questions pertained to training. Each question regarded a different type of training that participants might have completed. University training consisted of a one-day workshop. This training is offered each fall and is intended to provide TAs with a general orientation to college teaching. Faculty and administrators address university policies and procedures, general preparation for teaching college courses, and dealing with problems in the college classroom. The second type of training was offered at the departmental level. This training is more difficult to understand, because it varied greatly across academic departments. Whereas some departmental training consisted of a brief meeting with the department chair, other training took place over a week's time and allowed the TA to work with faculty as they developed the course syllabus and planned instructional and assessment activities. Finally, the influence of having an undergraduate degree in education was examined. The intent of this training is to provide an individual with the knowledge and skills required to teach. Although this preparation is not specifically directed toward teaching in college classrooms, it is very thorough and

therefore merits examination. An additional three questions pertained to teaching experience. The first type of experience was prior TA experience. The second type of experience regarded teaching at the college level. College teaching experience did not include prior TA experience. Finally, teaching experience in K-12 classrooms was examined. This type of experience was included because of the supervisory nature of the K-12 experience. Those having this type of teaching experience were likely to have worked closely with colleagues and received regular feedback about their teaching ability.

Section Two consisted of a Likert-type scale containing 35 teaching effectiveness items adapted from the Student Evaluation of Educational Quality [SEEQ] (Marsh, 1982a; 1982b; 1983; 1991). These 35 items converted into 9 comprehensive, highly reliable factors associated with college teaching effectiveness. The factors were: (1) Learning Value, (2) Enthusiasm, (3) Organization, (4) Group Interaction, (5) Individual Rapport, (6) Breadth of Coverage, (7) Examinations and Grading, (8) Assignments, and (9) Workload/Course Difficulty. These 9 factors have been replicated repeatedly and have been generalized across disciplines (Marsh, 1983; 1987; Overall & Marsh, 1980).

Cronbach's coefficient alpha was computed for each of the nine SEEQ factors to provide evidence of the internal consistency (reliability) of each factor. Using student ratings, these estimates ranged from a low of 0.7448 for the factor of Assignments to a high of 0.9646 for the factor of Enthusiasm, resulting in a median of 0.9336. Using TA self-ratings, these estimates were less convincing, ranging from a low of 0.3866 for Workload/Difficulty to a high of 0.7650 for Enthusiasm, with a median of 0.6730.

Design and Analysis

Each TA was rated on each of the nine factors of teaching effectiveness by the students enrolled in his or her class, and a class average was computed. TAs were asked to rate their performance as it was demonstrated in the same class. Ratings from three classes were not completed, so these TAs were eliminated from further analysis. In all, there was a total of 18 ratings of teaching effectiveness for each TA (9 self-ratings, 9 class averages).

These data regarding student- and self-ratings were summarized, and descriptive statistics (means and standard deviations) were calculated. A mixed-model repeated measures analysis of variance (ANOVA) design was used to examine the effects of pedagogical training and teaching ex-

perience. Specifically, the effects of three different types of training and three types of teaching experience were investigated, requiring this analysis to be performed six times. In each analysis, TAs were grouped according to whether they had a specific type of training or teaching experience so that teacher effectiveness ratings could be compared. In addition, the profiles of each group across the nine teaching effectiveness factors and the two raters (self-ratings, student ratings) were examined. As a follow-up to these analyses, correlations were calculated to examine the extent to which amount of training and experience were related to ratings of teaching effectiveness.

Finally, to investigate the influence of academic discipline, TAs were grouped according to their college of study to examine differences among their teacher effectiveness ratings. TAs from the colleges of Business and Human Sciences were not included in this analysis due to insufficient sample sizes. Therefore, the profiles of four groups of TAs across the nine teaching effectiveness factors and the two raters (self-ratings, student ratings) were examined.

Results

Each of the repeated measures analyses revealed a slight departure from sphericity. Because of this violation, obtained F values were evaluated based on an adjusted degrees of freedom. Using the Geisser-Greenhouse correction (Greenhouse & Geisser, 1959; Keppel, 1991), each F test was evaluated against a much more stringent criterion ($df_{\text{num.}} = 1$, and $df_{\text{denom.}} = n-1$). Using this criterion, the critical F necessary to reach statistical significance at the 0.05 level was 3.91.

TA Training

Table 2 summarizes the results from the analyses pertaining to effects of pedagogical training. A descriptive summary is provided in Table 3. The only type of training that produced a significant effect on teaching effectiveness ratings was an undergraduate degree in education ($F = 16.15, p < 0.001$). Those TAs with an undergraduate degree in Education were rated as more effective by both their students and themselves.

The effects of pedagogical training were further explained by the presence of two other interaction effects. First, an interaction between departmental TA training (A) and Marsh factors (B) was found. A comparison of the ratings of those TAs who received departmental training and those who did not was made on each of the nine Marsh factors using de-

TABLE 2
Effects of Pedagogical Training

	Type of Training									
	University GTA Training					Department GTA Training				
	<i>df</i>	MS	<i>F</i>	<i>df</i>	MS	<i>F</i>	<i>df</i>	MS	<i>F</i>	Undergraduate Degree in Education
<i>Between subjects</i>										
Training (A)	1	12.07	3.77	1	0.07	0.02	1	47.10	16.15***	
Error (S/A)	124	3.20		124	3.30		124	2.92		
<i>Within subjects¹</i>										
Marsh (B)	8	25.73	104.27***	8	26.13	107.86***	8	18.77	76.06***	
Training × marsh (AB)	8	0.41	1.66	8	0.97	4.00*	8	0.42	1.69	
Error (SB/A)	992	0.25		992	0.24		992	0.25		
Rater (C)	1	131.14	71.99***	1	127.61	69.42***	1	50.84	29.89***	
Training × rater (AC)	1	2.31	1.27	1	0.24	0.13	1	17.25	10.14***	
Error (SC/A)	124	1.82		124	1.84		124	1.70		
Marsh × rater (BC)	8	1.46	8.91***	8	1.36	8.25**	8	0.70	4.25*	
Training × marsh × rater (ABC)	8	0.38	2.34	8	0.26	1.60	8	0.41	2.52	
Error (SBC/A)	992	0.16		992	0.17		992	0.16		

¹Degrees of freedom used to evaluate each *F* ratio for within subjects effects have been adjusted using a Geisser-Greenhouse correction due to a departure from sphericity. (*df*_{num.} = 1, *df*_{denom.} = 125)

p* < 0.05. *p* < 0.01. ****p* < 0.001.

TABLE 3
Descriptive Summary of Pedagogical Training Effects

Rater	Marsh Factors																	
	M1		M2		M3		M4		M5		M6		M7		M8		M9	
	GTA	STU	GTA	STU	GTA	STU	GTA	STU	GTA	STU	GTA	STU	GTA	STU	GTA	STU	GTA	STU
University GTA Training																		
No	3.99	3.60	4.21	3.65	4.25	3.79	4.30	3.42	4.56	4.18	3.90	3.22	4.29	3.62	4.06	3.35	3.30	3.12
(55)	(0.56)	(0.71)	(0.52)	(0.96)	(0.55)	(0.84)	(0.58)	(0.94)	(0.55)	(0.70)	(0.66)	(0.90)	(0.61)	(0.85)	(0.80)	(0.74)	(0.40)	(0.40)
Yes	4.15	3.80	4.16	3.86	4.32	3.91	4.09	3.64	4.78	4.35	3.87	3.45	4.52	3.91	4.21	3.63	3.52	3.30
(71)	(0.45)	(0.70)	(0.57)	(0.84)	(0.56)	(0.72)	(0.71)	(0.88)	(0.36)	(0.55)	(0.70)	(0.85)	(0.56)	(0.77)	(0.73)	(0.77)	(0.46)	(0.42)
Department GTA Training																		
No	4.04	3.75	4.20	3.81	4.34	3.95	4.28	3.53	4.67	4.30	3.97	3.42	4.36	3.81	3.95	3.41	3.44	3.19
(59)	(0.52)	(0.75)	(0.51)	(0.91)	(0.50)	(0.78)	(0.57)	(0.89)	(0.52)	(0.65)	(0.64)	(0.92)	(0.57)	(0.82)	(0.83)	(0.76)	(0.46)	(0.44)
Yes	4.12	3.67	4.16	3.73	4.25	3.77	4.10	3.56	4.70	4.25	3.81	3.29	4.48	3.76	4.31	3.60	3.41	3.24
(67)	(0.50)	(0.68)	(0.58)	(0.89)	(0.60)	(0.76)	(0.72)	(0.94)	(0.41)	(0.61)	(0.70)	(0.84)	(0.60)	(0.82)	(0.66)	(0.76)	(0.44)	(0.40)
Undergraduate Degree in Education																		
No	4.05	3.57	4.13	3.60	4.27	3.76	4.20	3.39	4.65	4.20	3.88	3.23	4.34	3.64	4.12	3.38	3.38	3.14
(98)	(0.52)	(0.70)	(0.54)	(0.87)	(0.59)	(0.80)	(0.65)	(0.90)	(0.47)	(0.64)	(0.70)	(0.87)	(0.59)	(0.82)	(0.77)	(0.76)	(0.42)	(0.39)
Yes	4.18	4.19	4.35	4.36	4.36	4.21	4.13	4.06	4.82	4.54	3.89	3.77	4.71	4.30	4.23	3.98	3.59	3.50
(28)	(0.47)	(0.53)	(0.56)	(0.71)	(0.40)	(0.54)	(0.71)	(0.74)	(0.40)	(0.51)	(0.59)	(0.79)	(0.49)	(0.52)	(0.75)	(0.61)	(0.50)	(0.39)

NOTE: M1 — Learning Value, M2 — Enthusiasm, M3 — Organization, M4 — Group Interaction, M5 — Individual Rapport, M6 — Breadth of Coverage, M7 — Examinations/Grading, M8 — Assignments, M9 — Workload/Difficulty

pendent *t*-tests. In order to control for the inflation of Type 1 error, each *t*-test was evaluated at a more conservative alpha level ($05/9 = 0.0055$). These comparisons revealed one statistically significant difference on the factor of Assignments. Specifically, those TAs who attended departmental training received more positive ratings on the factor of Assignments compared to those TAs without such departmental training. Although not statistically significant, the ratings on the remaining eight Marsh factors were slightly lower for those TAs with departmental training.

As a follow-up, Pearson correlations were computed between the number of days of departmental training and ratings on each of the nine Marsh factors. TAs were asked to round the number of days up to the nearest whole day. Therefore, many TAs who may have only had a brief meeting would report 1 day. The average number of days reported was 2. To control for the inflation of Type 1 error, the statistical significance of each correlation coefficient was evaluated at a more conservative alpha level ($05/9 = 0.0055$). This analysis revealed two statistically significant relationships between duration of departmental training and the factors of Group Interaction ($r = -0.4430, p = 0.002$) and Workload/Difficulty ($r = -0.4249, p = 0.003$). These relationships indicate that TAs who have had more days of departmental training tend to receive lower ratings on the factor of Group Interaction and their course is perceived as being easier, with a lighter workload and a slower pace than those TAs who attended fewer days of departmental training.

A second interaction was found between undergraduate degree in education (A) and rater (C). Follow-up comparisons revealed that TA self-ratings were very similar for TAs with a degree in education and those without such a degree. When averaged across the nine Marsh factors, the TA self-rating for those with a degree in education was 4.55, compared to 4.53 for the other TAs. The ratings received by students, however, were not as consistent. Those TAs with an undergraduate degree in education received significantly ($p < 0.001$) higher student ratings than those without this preparation (4.10 vs. 3.54).

Significant effects also revealed differences in ratings across the nine Marsh factors (B) of teaching effectiveness and between the two different raters (C). Specifically, TAs received the highest ratings for the factor of Individual Rapport and the lowest for Workload/Difficulty, indicating difficult courses with heavy workloads. Furthermore, TAs consistently rated themselves more positively than did their students.

These findings were, however, somewhat qualified by the significant interaction (BC) revealed between the two. The rater profiles across the nine teaching effectiveness factors remained very similar with few exceptions. TA ratings were significantly higher than student ratings on

each of the nine Marsh factors. Differences between specific Marsh factors were, however, somewhat dependent upon the source of rating.

These ratings were highest for Individual Rapport and lowest for Workload/Difficulty for both the TA and student ratings. Dependent *t*-tests were used to examine each rater profile separately and make specific comparisons among the nine Marsh factors. A conservative alpha level of 0.0014 (0.05/36) was used to evaluate the significance of each comparison. Few differences in the two rater profiles were detected. Students rated the factor of Assignments significantly lower than the factors of Learning Value, Enthusiasm, and Organization while TAs did not. Students also rated the factor of Group Interaction lower than Enthusiasm and Organization, whereas TAs did not. On the other hand, TAs rated themselves significantly higher on the factor of Examinations/Grading compared to the factors of Learning Value and Enthusiasm, whereas students did not. TAs also rated themselves significantly higher on Breadth of Coverage, compared to Workload/Difficulty.

Teaching Experience

A summary of the results from the analyses pertaining to effects of teaching experience is found in Table 4. Means and standard deviations are reported in Table 5. Specifically, those TAs who reported having some teaching experience either at the K-12 or college levels received significantly higher ratings than those without such experience. However, the effect of prior TA experience was not positive. Instructors who reported having prior TA experience received lower ratings than those TAs without this experience.

An interaction between teaching experience (A) and rater (C) was found when examining the effects of K-12 teaching and TA experience. The differences in ratings between those TAs with K-12 teaching experience and those without were significant ($p < 0.01$) when examining both TA self-ratings and student ratings. However, student ratings resulted in a much larger difference. Whereas the TA ratings averaged 4.22 for the inexperienced group and 4.33 for the experienced group, student ratings averaged 3.58 and 4.12, respectively.

The second interaction between experience (A) and rater (C) revealed that TA self-ratings were very consistent between those with and without prior TA experience. TA self-ratings averaged 4.16 for the inexperienced group and 4.11 for the group with prior TA experience. On the other hand, the difference between student ratings for these two groups was statistically significant ($p < 0.01$) as the inexperienced group received an average rating of 3.80 compared to an average of 3.48 for the experienced group.

TABLE 4
Effects of Teaching Experience

	Type of Teaching Experience									
	K-12 Teaching					College Teaching				
	<i>df</i>	MS	<i>F</i>	<i>df</i>	MS	<i>F</i>	<i>df</i>	MS	<i>F</i>	GTA Experience
<i>Between Subjects</i>										
Experience (A)	1	47.78	16.41***	1	14.26	4.48**	1	18.72	5.95***	
Error (S/A)	124	2.91		124	3.18		124	3.15		
<i>Within Subjects¹</i>										
Marsh (B)	8	13.69	55.58***	8	20.39	82.26***	8	24.96	100.23***	
Experience × marsh (AB)	8	0.46	1.88	8	0.28	1.12	8	0.13	0.53	
Error (SB/A)	992	0.25		992	0.25		992	0.25		
Rater (C)	1	27.57	15.80***	1	92.74	50.45***	1	138.02	78.48***	
Experience × rater (AC)	1	11.77	6.74***	1	0.26	0.14	1	10.11	5.75***	
Error (SC/A)	124	1.75		124	1.84		124	1.76		
Marsh × rater (BC)	8	0.52	3.18	8	1.04	6.30***	8	1.50	9.12***	
Exp × marsh × rater (ABC)	8	0.36	2.20	8	0.24	1.45	8	0.33	2.00	
Error (SBC/A)	992	0.16		992	0.17		992	0.16		

¹Degrees of freedom used to evaluate each *F* ratio for within subjects effects have been adjusted using a Geisser-Greenhouse correction due to a departure from sphericity. (*df*_{num.} = 1, *df*_{denom.} = 125)
 p* < 0.05. *p* < 0.01. ****p* < 0.001.

TABLE 5
Descriptive Summary of Teaching Experience Effects

Rater	Marsh Factors																	
	M1		M2		M3		M4		M5		M6		M7		M8		M9	
	GTA	STU	GTA	STU	GTA	STU	GTA	STU	GTA	STU	GTA	STU	GTA	STU	GTA	STU	GTA	STU
K-12 Teaching Experience																		
No	4.05	3.62	4.14	3.65	4.26	3.80	4.19	3.44	4.65	4.21	3.86	3.27	4.35	3.68	4.12	3.41	3.41	3.17
(109)	(0.52)	(0.71)	(0.52)	(0.89)	(0.58)	(0.79)	(0.63)	(0.91)	(0.48)	(0.65)	(0.69)	(0.87)	(0.60)	(0.82)	(0.76)	(0.76)	(0.44)	(0.41)
Yes	4.28	4.31	4.45	4.54	4.48	4.23	4.13	4.23	4.91	4.67	4.02	3.86	4.86	4.43	4.29	4.14	3.53	3.55
(17)	(0.38)	(0.41)	(0.65)	(0.41)	(0.31)	(0.50)	(0.85)	(0.58)	(0.18)	(0.20)	(0.60)	(0.79)	(0.21)	(0.29)	(0.77)	(0.42)	(0.49)	(0.32)
College Teaching Experience																		
No	4.02	3.69	4.10	3.71	4.27	3.80	4.13	3.47	4.68	4.21	3.84	3.28	4.41	3.72	4.06	3.47	3.42	3.21
(94)	(0.50)	(0.69)	(0.56)	(0.92)	(0.57)	(0.79)	(0.69)	(0.95)	(0.48)	(0.68)	(0.68)	(0.89)	(0.62)	(0.84)	(0.77)	(0.78)	(0.44)	(0.40)
Yes	4.26	3.77	4.41	3.95	4.37	4.01	4.34	3.77	4.70	4.47	4.02	3.55	4.46	3.98	4.38	3.64	3.43	3.26
(32)	(0.50)	(0.77)	(0.44)	(0.80)	(0.50)	(0.71)	(0.53)	(0.76)	(0.39)	(0.40)	(0.64)	(0.82)	(0.47)	(0.70)	(0.71)	(0.72)	(0.46)	(0.47)
GTA Experience																		
No	4.09	3.86	4.21	3.95	4.28	3.98	4.17	3.68	4.76	4.39	3.92	3.49	4.45	3.92	4.11	3.65	3.49	3.27
(75)	(0.50)	(0.71)	(0.57)	(0.85)	(0.48)	(0.69)	(0.72)	(0.91)	(0.41)	(0.55)	(0.63)	(0.89)	(0.60)	(0.76)	(0.83)	(0.77)	(0.48)	(0.45)
Yes	4.07	3.49	4.13	3.50	4.31	3.67	4.20	3.34	4.58	4.11	3.84	3.15	4.37	3.58	4.19	3.30	3.33	3.15
(51)	(0.52)	(0.66)	(0.52)	(0.89)	(0.65)	(0.85)	(0.57)	(0.88)	(0.52)	(0.70)	(0.74)	(0.84)	(0.58)	(0.85)	(0.65)	(0.72)	(0.38)	(0.36)

Note: M1 — Learning Value, M2 — Enthusiasm, M3 — Organization, M4 — Group Interaction, M5 — Individual Rapport, M6 — Breadth of Coverage, M7 — Examinations/Grading, M8 — Assignments, M9 — Workload/Difficulty

College of Study

A summary of the results from the analyses pertaining to effects of college of study is found in Table 6. Means and standard deviations are reported in Table 7. This analysis revealed a main effect for college of study ($F = 25.13, p < 0.001$). Those TAs from the College of Education consistently received the highest ratings, whereas TAs from Science and Math received the lowest.

This main effect, however, is further explained by the presence of an interaction between college of study (A) and rater (C) ($F=12.51, p < 0.001$). On average, TA self-ratings were very similar. Post-hoc tests did reveal that TAs from the College of Liberal Arts rated themselves significantly higher than did TAs from the College of Science and Math (4.34 vs. 4.05). Student ratings, however, revealed greater differences among the four colleges of study. Specifically, TAs from the colleges of Education and Liberal Arts were rated significantly higher than those from Engineering and Science and Math. The average student ratings for TAs from Education and Liberal Arts were 4.44 and 4.14, compared to average ratings of 3.64 and 3.33 for TAs from Engineering and Science and Math. Significant main effects also revealed differences in ratings across the nine Marsh factors (B) of teaching effectiveness and between the two different raters (C). As discussed earlier, TAs received the highest ratings for the factor of Individual Rapport and the lowest for Work-

TABLE 6
Effects of College of Study

	<i>df</i>	<i>MS</i>	<i>F</i>
<i>Between-Subjects Effects</i>			
College (A)	3	53.94	25.13*
Error (S/A)	115	2.15	
<i>Within-Subjects Effects</i>			
Marsh factors (B)	8	15.29	58.83*
College $\times$ marsh (AB)	24	1.00	3.84
Error (SB/A)	920	0.26	
Rater (C)	1	36.18	24.79*
College $\times$ rater (AC)	3	18.26	12.51*
Error (SC/A)	115	1.46	
Marsh $\times$ Rater (BC)	8	0.42	2.56
College $\times$ marsh $\times$ rater (ABC)	24	0.52	3.15
Error (SBC/A)	920	0.17	

* $p < 0.001$

TABLE 7
Descriptive Summary of Effects for College of Study

Rater	Marsh Factors																	
	M1		M2		M3		M4		M5		M6		M7		M8		M9	
	GTA	STU	GTA	STU	GTA	STU	GTA	STU	GTA	STU	GTA	STU	GTA	STU	GTA	STU	GTA	STU
College of Study																		
ED (15)	3.99 (0.56)	3.60 (0.71)	4.21 (0.52)	3.65 (0.96)	4.25 (0.55)	3.79 (0.84)	4.30 (0.58)	3.42 (0.94)	4.56 (0.55)	4.18 (0.70)	3.90 (0.66)	3.22 (0.90)	4.29 (0.61)	3.62 (0.85)	4.06 (0.80)	3.35 (0.74)	3.30 (0.40)	3.12 (0.40)
ENG (13)	4.15 (0.45)	3.80 (0.70)	4.16 (0.57)	3.86 (0.84)	4.32 (0.56)	3.91 (0.72)	4.09 (0.71)	3.64 (0.88)	4.78 (0.36)	4.35 (0.55)	3.87 (0.70)	3.45 (0.85)	4.52 (0.56)	3.91 (0.77)	4.21 (0.73)	3.63 (0.77)	3.52 (0.46)	3.30 (0.42)
LA (24)	4.04 (0.52)	3.75 (0.75)	4.20 (0.51)	3.81 (0.91)	4.34 (0.50)	3.95 (0.78)	4.28 (0.57)	3.53 (0.89)	4.67 (0.52)	4.30 (0.65)	3.97 (0.64)	3.42 (0.92)	4.36 (0.57)	3.81 (0.82)	3.95 (0.83)	3.41 (0.76)	3.44 (0.46)	3.19 (0.44)
S/M (67)	4.12 (0.50)	3.67 (0.68)	4.16 (0.58)	3.73 (0.89)	4.25 (0.60)	3.77 (0.76)	4.10 (0.72)	3.56 (0.94)	4.70 (0.41)	4.25 (0.61)	3.81 (0.70)	3.29 (0.84)	4.48 (0.60)	3.76 (0.82)	4.31 (0.56)	3.60 (0.76)	3.41 (0.44)	3.24 (0.40)

NOTE: M1 — Learning Value, M2 — Enthusiasm, M3 — Organization, M4 — Group Interaction, M5 — Individual Rapport, M6 — Breadth of Coverage, M7 — Examinations/Grading, M8 — Assignments, M9 — Workload/Difficulty

load/Difficulty. Also, TA self-ratings were significantly higher than their corresponding undergraduate ratings.

Discussion

What impact does TA training and teaching experience have on the teacher effectiveness of TAs? The results from this study suggest that there is little substitute for actual teaching experience, because TAs with either K-12 or college teaching experience were consistently rated as more effective than those without such teaching experience. These experience effects, however, depend upon the source of the rating. Whereas student ratings reflect a difference between those TAs with and without these experiences, TA self-ratings did not. These findings are consistent with prior research, which indicates that TAs grow as they gain experience (Sprague & Nyquist, 1991), indicate higher levels of self-efficacy toward teaching (Prieto & Altmaier, 1994), and receive higher student ratings (Briggs & Hofer, 1991; W. Davis, 1991; Ferris, 1991).

Interestingly, prior TA experience did not have a positive impact on teacher effectiveness ratings. In fact, student ratings were consistently higher for TAs without prior TA experience. This finding is not surprising given the fact that TAs are consistently assigned to teach undergraduates with little or no training or supervision. Despite this lack of training, TAs in this study consistently rated themselves more positively than did their students. TAs who perceive themselves as being effective may repeat the same or less effective behaviors as a result of poor or nonexistent supervision. On the other hand, TAs who have taught in K-12 settings have received supervision and feedback, affording them opportunities to improve their teaching ability.

Some influence of training emerged from this study, because TAs with the most comprehensive training in pedagogical methods (i.e., undergraduate degree in education) were rated as more effective than TAs without such training. As with the effects for experience, the impact of having an undergraduate degree in Education is realized when examining student ratings, but not TA self-ratings. TAs with degrees in education have been socialized early into the teaching profession, possess a desire to teach, and anticipate what to expect in the classroom. These factors may have boosted their levels of self-confidence and self-efficacy, resulting in more effective teaching.

Why has TA training failed to produce more positive effects? Generally, TAs are afforded limited training opportunities. The types of university and departmental training offered to TAs in this study were no exception. The university training was sponsored by the Office of the

Provost and the Center for Teaching Effectiveness. It was limited to a one-day workshop and focused primarily on three basic issues: policy, students, and instruction. The types of training offered by academic departments varied a great deal across academic areas, making it very difficult to determine the effectiveness of such training.

Current TA training efforts must be expanded in order to produce significant effects of TA teaching effectiveness. Part of the difficulty in evaluating the effects of TA training is that we can rarely agree on how training is defined. As evidenced by the types of departmental training offered in this study, the definition of TA training is not agreed upon across, or even within, academic disciplines. There are components that are common to many TA training programs. However, these components are not typically very positive. Typical TA training offers treatment of a limited variety of content. A substantial part of the training curriculum is dedicated to university and departmental policy, leaving little time for training in pedagogical techniques. A second critical component missing from TA training is experience. TAs are not typically given opportunities to practice their pedagogical skills. Without such opportunities to apply their skill, TAs fail to receive valuable feedback about their teaching until after they have taught an entire course, or more. This feedback comes too late to refine their teaching for the current class and is often forgotten by the time the next class begins.

The numbers of TAs involved in undergraduate instruction continue to grow. Unfortunately, the efforts made by universities to prepare these individuals have not been sufficient enough to meet the increased needs of TAs. Universities must expand their efforts so that TAs are adequately prepared to teach the courses for which they have been hired and so that students enrolled in these courses receive the quality of instruction for which they have paid. Current TA training efforts have fallen short of this mark, requiring serious revision before proving successful.

Recommendations

Perhaps the first step in the revision of TA training is to work toward agreement on the definition and purpose of such training. A broad goal of such training is to prepare TAs for their teaching responsibilities within the department, university, and the profession. This goal can be, and already has been, interpreted in many different ways. It is the interpretation of the goal that leads to the definition, planning, and implementation of TA training.

One interpretation would lead to an overview, or orientation, of TA teaching responsibilities. It is this interpretation that results in the types

of TA training typically offered at the university and departmental levels. Another interpretation would result in training designed to foster the development of TAs' teaching ability. This interpretation would provide more valuable training programs for TAs, equipping them with a greater amount and variety of pedagogical skills, and increasing the quality of instruction currently delivered to undergraduate students.

We strongly encourage the profession to accept the second interpretation. However, with this acceptance, much further revision of TA training becomes necessary. The types of training currently offered need a great deal of expansion, both in terms of the content of TA training and of the methods used to deliver this training.

Much greater emphasis must be placed on pedagogical methods. Current TA training programs spend too much time with university and departmental policies and procedures. Perhaps this is due, in part, to the political motivations of many TA training programs. If the profession becomes interested in preparing TAs to teach, the expansion of the current training curriculum to include such topics as course planning, instructional delivery techniques, and the evaluation of student learning is essential.

As the curriculum expands, so must the manner in which the training is delivered. Current training efforts are typically delivered in the form of large-group workshops in which material is presented by faculty and administrators. TAs must become more actively involved in this training; the process must become more interactive. This interaction can be facilitated through small group discussions on issues and methods pertinent to college teaching and involvement of TAs in actual teaching situations.

TA training should make further use of the case-based instruction, in which realistic cases are presented and possible solutions are discussed by students. This method has been used widely in the professions of business (Christenson, 1987; McNair, 1954), law (Stevens, 1983) and education (Kleinfield, 1991; Merseth, 1991, Shulman, 1986; G. Sykes, 1989). College teaching situations can be captured in the form of written or video cases and discussed as part of TA training while experienced college faculty serve as facilitators in the delivery and discussion of these cases, affording TAs opportunities to identify problems and address situations that they will later encounter in their classrooms.

Another attempt to provide TAs with opportunities to practice their teaching duties is through the use of simulation exercises. Simulations, intended to resemble actual teaching situations, would provide TAs greater opportunities to perform specific teaching duties related to course planning, instruction, and evaluation. Some of the forms that simulations have taken include in-basket tests (Fredickson, Saunders, &

Wand, 1957), computerized planning simulations (McNergney, Medley, Allesworth, & Innes, 1983), interactive teaching simulations (Shannon, Medley, & Hays, 1993) and role playing and other group activities (Cruickshank, 1988; Haertel, 1991; Jacobson & Stille, 1992).

One group activity, which has been very successful in preparing teachers for K-12 teaching settings, is microteaching (Cruickshank & Metcalf, 1993; MacLeod, 1987; McKeachie, 1994; Pauline, 1993; Perlberg, 1988). This technique allows students to practice teaching in front of faculty and peers, gaining valuable experience and feedback, before being placed in front of more critical and demanding audiences. As part of TA expanded training programs, TAs should be given opportunities to engage in microteaching.

The expansion of the current TA training curriculum and delivery methods to include cases, simulations, and microteaching would afford TAs several important opportunities. First, TAs who lack actual teaching experience would be able to gain some sense of what really happens in the college classroom. Second, TAs would be required to think about what they would do should these situations confront them, offering them better preparation. Finally, TAs would become more actively involved in the training process and have greater opportunities to apply what they have learned and receive valuable feedback from peers and college faculty.

As the nature of TA training becomes more oriented toward fostering the development of TAs' teaching ability, it must also be extended into the classroom. Some mechanism must be set in place to supervise TAs as they perform their actual teaching responsibilities. As a minimum, university and/or departmental training efforts should be extended to include follow-up observations of TA teaching. Follow-up observations would allow TAs to demonstrate the skills they learned and afford faculty greater opportunities to work closely with them.

A more complete expansion of TA training would include a formalized experience component in the form of a supervised practicum, similar to the manner in which teachers are prepared. This practicum experience would be coordinated at the program or departmental level to allow for more specialized training in the teaching of a specific disciplinary area. According to Staton and Darling (1989), Sullivan (1991), and Wilkening (1991), a more complete socialization into academic culture necessitates a mentorship under exemplary teachers. Unfortunately, a large pool of faculty who have the time or pedagogical expertise to mentor every TA is not generally available (Cardozier, 1991). There is also little reward for effective teaching post-tenure, especially at comprehensive and research institutions. Successful programs designed to honor good teaching must be consistent with the mission of the institution, al-

lowing research and teaching to compliment, not compete with, each other (Sorcinelli & Davis, 1996; Svinicki & Menges, 1996).

Training must also afford TAs more extensive opportunities to practice their teaching skills and obtain feedback on their effectiveness. An expansion of the current TA training must also include periodic and realistic feedback of TA teaching for the purposes of professional development. Feedback is typically provided through student ratings at the end of the course, when it is too late to improve instruction in the course; it must be provided earlier, more often, and from a variety of sources (Geis, 1991; Lewis, 1991). Previous studies have found that providing midterm feedback can result in improved teaching performance (Cohen & Herr, 1979; McKeachie, 1987; Murray, 1987; Overall & Marsh, 1979). One study (Wu, 1993) found this feedback to be especially helpful for inexperienced TAs, those in greatest need of assistance.

The manner in which feedback is given is also very important. Typically, a TA is presented with a numerical summary of his or her performance on the standard university rating form (Shannon, Twale, & Hancock, 1996). When information from student ratings of teaching is compared to some standard and presented with other important information regarding the instructor, students, and course, it is more useful (Theall & Franklin, 1991). A comparison with other instructors teaching similar courses with comparable students helps put one's performance in perspective. Further examination of information from student ratings regarding specific aspects such as assignments, questioning, or individual rapport can reveal strengths and weaknesses and be used to target areas that need improvement.

Feedback should not be limited to that obtained from student ratings. Greater involvement of faculty and administrators is necessary. They must be willing to impart knowledge on teaching and course content as well as provide helpful feedback on TA classroom performance (Bomotti, 1994). We recommend placing TAs with mentor teachers who are committed to modeling good pedagogical techniques. We realize that this may present some difficulty, because many college faculty have not been trained in, or rewarded for, pedagogical techniques and, therefore, would not serve as the best mentors.

In the College of Education, we have begun to implement departmental TA training known as the pedagogical practicum, in which a TA and an experienced faculty member work very closely together. The TA gains his or her teaching experience in a gradual manner. Initially, the faculty member and the TA co-teach a section of the same course, and regular meetings are held to prepare for each class throughout the

practicum experience. In addition, the faculty member and TA meet after class in a postobservation conferences to review the class and make suggestions for improvement. These meetings allow TAs to receive direct feedback on their teaching. This process continues for the duration of one quarter, or until the TA is ready to become responsible for his or her own section of the course.

This study only begins to shed light on the importance of training and experiences beyond what is typically afforded TAs. The findings regarding typical training (i.e., university or departmental) and experiences (TA or college) were inconclusive. However, the influences of prior K-12 teaching experiences and undergraduate training in education were consistent. Those TA with prior experience in K-12 teaching settings and/or undergraduate degrees in education were perceived as being more effective teachers.

TA training programs must be designed according to what is known about effective teacher preparation. These programs should include specific components designed to improve TAs' ability in areas of effective teaching. The nine factors used in this study would provide one way to help define these areas of effective teaching. The efforts of various professional organizations may also be helpful in the identification of effective teaching behaviors and standards for their evaluation. There are also a number of resources available for college faculty or TAs interested in improving their teaching (Centra, 1993; Davis, 1993; McKeachie, 1994; Weimer, 1990).

The current study has examined the effects of training and experience at one research institution. A larger sampling of TA training programs from different types of institutions with varying missions is necessary to verify the effects of training and experience. Furthermore, specialized departmental training needs to be examined more closely. Further examination of the effects of specialized departmental training should control for academic discipline. Finally, as more carefully designed training programs begin to emerge, empirical studies are necessary to evaluate their effectiveness.

Conclusion

We cannot continue to staff undergraduate courses with TAs simply because they are available and economically affordable. TAs can not just be placed as instructors in college classrooms with little or no preparation in pedagogical methods. If the profession accepts the challenge to prepare TAs for their teaching responsibilities, it must also respond with

more effective TA training programs. The current efforts to train TAs do not begin to meet this challenge.

Accepting the challenge is easy, but implementing programs to meet it will be difficult. Expansion of current training, both in terms of the content of TA training and the methods used to deliver this training, is necessary. This expansion will require additional commitments in terms of money and personnel. Expanding the types of training methods will also require the retraining of faculty in pedagogical techniques so that they are able to assist with training and supervise practicum experiences.

As TAs are afforded greater opportunities to apply their pedagogical skills in classroom teaching situations and work closely with pedagogical mentors, they will become more effective teachers. Universities can then be assured greater confidence that the quality of instruction has not been compromised, and students will be afforded the maximum benefit of the teaching/learning process. By providing these opportunities for TAs, faculty and administrators would also fulfill gatekeeper responsibilities and help break the cycle of poor instruction.

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Book Reviews

Wise Moves in Hard Times: Creating and Managing Resilient Colleges and Universities, by David W. Leslie and E. K. Fretwell, Jr. San Francisco: Jossey-Bass, 1996. 288+ pp. \$32.95.

JAMES C. HEARN, University of Minnesota

David W. Leslie and E. K. Fretwell are well qualified to write a book on effective leadership and management of colleges and universities. Both have worked in high-level positions in campus administration, in national associations, and in public-policy arenas, and both have written insightfully before on higher-education governance. Not surprisingly, therefore, the book they have produced, *Wise Moves in Hard Times*, is excellent.

Simply put, the book is aimed at helping higher education "get out of the mess we are in" (p. 3). For Leslie and Fretwell, the difficulties stem in part from being forced to use stagnant levels of resources to educate increasing numbers of students. But, they argue, "the present crisis is not merely one of resources, . . . it is also a crisis of confidence and crisis of values" (p. xiii). They go on to suggest that if higher education does not reemphasize the activities most supported by its societal sponsors, the enterprise faces potentially unpleasant restructuring. Thus, for these authors, the "mess" of the 1990s is notably more fundamental and more difficult to solve than the putative crises of the prior three decades.

The book has three parts. The first, "Hard Times," presents background information on the challenges confronting higher education and describes the empirical study for this volume. Information is presented on sampling and information-gathering procedures at thirteen case-study institutions, and the sources and impacts of stress on these campuses are discussed.

The second part of the book, "Searching for Solutions," focuses on the ways institutions have adapted to evolving circumstances: changes in mission and organization, changes in ways of dealing with problems, and changes in approaches to teaching and learning. Not surprisingly, Leslie and Fretwell find institutional success often tied to the pursuit of clear, distinctive purposes. Yet there are surprises as well. For example, despite the literature's familiar injunctions to build consensus around a clear mission, then work sequentially from mission to strategy to action, Leslie and Fretwell found several campuses able to work successfully in incremental fashion, making significant progress despite internal dissensus and unresolved external threats.

The book's third part, "Wise Moves," suggests effective responses to institutional difficulties. Three notions are paramount to the recommendations presented here. First, institutions should identify critical and soluble areas for immediate attention and seek thereby to act intelligently in the midst of complexity and difficulty, an approach the authors call "simultaneous tracking."

This entails pursuing several action agendas at once, before closure is reached around all areas of mission and strategy. Second, institutions should pursue "enlightened change": producing good information about operations and prospects, sharing it widely among various constituencies, and cooperating in choosing actions for the institution. Third, institutions should have a quality of "resilience" that pushes them to pursue distinctiveness, excellence, and continuous attention to quality. Interestingly, Leslie and Fretwell argue here that effective leaders resist heavy-handed control over the actions of their institutions, trusting instead the virtues of "loose coupling" and entrepreneurialism. Doing so, the authors argue, allows strategies to emerge naturally rather than from the top down. Of course, the author's faith in the effectiveness of this approach is tempered by their distaste for disorder and the value they place on clear-cut overall missions and governance.

Wise Moves in Hard Times has several notable strengths. Faculty and administrators are sometimes unrealistically confident about the strength of higher education's external support, so Leslie and Fretwell's *attention to the problems of public trust* is very welcome. The authors' *advocacy of systematic institutional analysis* is also valuable. Too often, top leadership on campus does not exhibit substantial faith in knowledgeability as a prelude to action. Another strength is the book's *attention to teaching and learning* as an aspect of organizational effectiveness. Remarkably, these core activities are often ignored in studies of strategy and change. Readers will also appreciate that the authors' show a *reluctance to provide all-purpose, all-institution solutions*. Individual institutions require individualized solutions and, as the authors put it, "good solutions are local solutions" (p. 12). Finally, Leslie and Fretwell's *attention to how institutions can deal simultaneously with multiple and distinct problems* is a true strength of the book. Contrary to much of the strategic-planning literature, one cannot assume that progress comes solely by identifying a mission, achieving consensus, and then pursuing a single integrated strategy. Such an approach oversimplifies the complex reality of institutional life. Leslie and Fretwell's savvy discussion of "rational planning's shortcomings" (p. 128) should appeal to readers who have begun to question the idealized tenets of much of the planning literature.

The weaknesses of the book arise mainly out of the design of the study, which hampers confident generalizations. The study focuses on only thirteen quite varied institutions, including two research universities, several small state colleges, and a massive urban community-college system. What is more, ultimately identifying success is difficult in the evolving, highly contextualized fortunes of any set of institutions and is certainly so in such a small group. Still, the depth of the case analyses and the measured, mature tone of the writing here are reassuring. These are two authors the reader can trust.

There are few books directly comparable to *Wise Moves*. No other volume has addressed so comprehensively and productively both organizational functioning and the larger questions of societal relations. The book complements and supplements other useful works, such as Birnbaum's *How Colleges Work*, which offers a theoretically informed overview of functioning in colleges and universities, and Fairweather's *Faculty Work and Public Trust*, which deals provocatively with the tensions between institutions and their societal sponsors. Together, these three volumes provide the raw materials for thoughtful consid-

eration and action on the most fundamental problems in institutional governance and organizational change.

The authors suggest that the intended audience for this volume is broad: "With all due modesty, we think this book should be read carefully—by trustees, presidents, vice presidents, deans, department leaders, faculty, and leaders in the broader community—for ideas about how higher education can better serve the public on whom it depends for support" (p. xii). Such ambition is not unusual in generously funded multi-site management studies like this one. Too often, such studies disappoint, providing in the end little more than a recounting of a disconnected set of cases followed by an aphoristic list of recommendations of little practical or theoretical use to readers. To the authors' credit, and to the credit of their sponsors TIAA-CREF and their interview subjects, the book is something very much better than that: a thoroughly engaging, sensible, and useful reflection on the ways institutions can effectively deal with their difficulties. The intended audience is well served.

ERRATUM

The order of the authors of "Factors Associated with Student Loan Default Among Different Racial and Ethnic Groups" in the March/April 1998 issue was incorrect. The authors should have been listed as follows: J. Fredericks Volkwein, Alberto F. Cabrera, Bruce P. Czelest, and Michelle R. Napierski-Prancl.

Global Prospects for Education:

Development, Culture, and Schooling

Edited by Scott G. Paris and Henry M. Wellman

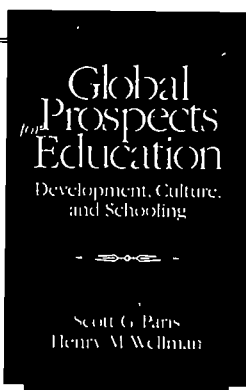
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Are Standardized Tests Fair to African Americans?

Predictive Validity of the SAT in Black and White Institutions

The controversy over whether standardized tests like the SAT and the ACT are fair to ethnic minorities continues to rage. There is considerable opinion that standardized tests are unfair to African Americans and other minorities. Proponents of standardized tests argue that they offer an objective, common yardstick that helps identify capable students who come from various backgrounds and grading systems. Thus, they prevent discrimination against able minority candidates (College Board, 1983). The National Research Council of the National Academy of Sciences reports that SAT scores predict performance as accurately for blacks as they do for majority applicants. Though the report acknowledges that average scores for whites are higher than those for blacks, just as they are for men compared to women, the averages do not reveal the different abilities of individuals within those groups, which is what the test is intended to identify. Opponents of standardized tests allege that they are inherently unfair to disadvantaged minorities because they are culturally and educationally inappropriate (Hilliard, 1990; Carty-Bennia, 1989), because such tests are frequently wrong in assessing the potential of minorities (Crouse & Trusheim, 1988), and because wide variation in predictive validity suggests unfairness (see Wilson, 1981; Houston, 1983; Temp, 1971).

The evidence for predictive validity of the SAT for white students is

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consistent (see Table 1). A study by Cameron Fincher (1974) is representative of many large-scale efforts that validate the effectiveness of the SAT. Fincher's work was carried out in 29 institutions of the university system of Georgia over a 13-year period. The average correlation obtained was 0.490 (or 24% of the variance in grades). Ford and Campos (1977) similarly reported a summary of validity data gathered over 10 years from 1964 to 1974, and found the average correlation with freshman grades for the verbal SAT and the math SAT to be 0.370 and 0.320, respectively (13.7% and 10.2% of the variance). This study also found that SAT scores were predicting as well in more recent years as in earlier years, but that the validity of the high-school record and multiple correlations had declined slightly. A study by Ramist, Lewis, and McCamley-Jenkins (1994) reported validity coefficients for students in 11 colleges. The average correlation of the SAT with freshman grades was 0.420 (17.6% of the variance). Willingham and Breland (1982), in a study of 18 independent colleges, found correlations averaging 0.420 (17.6% of the variance). Note that validity coefficients are rarely considered alone but in combination with the high-school record, which produces substantially higher multiple correlations.

Several smaller studies rely on data from a single college and also find results similar to the large-scale efforts. For instance, Wilson (1980) found that at a state university the math and verbal SATs correlated 0.388 and 0.392, respectively, with grades (15.5% and 15.1% of the variance). Wilson (1981) also reported data at a highly selective college and found the math and verbal SAT correlations to be somewhat lower, that is, 0.301 and 0.338 (9.1% and 11.4%). At New York University, Fleming & DuBois (1981) found the SAT score to be the best predictor of college grades ($r = 0.410$; 16.8%) in a study that considered several motivational variables. Other studies, both by ETS researchers and by independent researchers, report similar results (Morgan, 1990; Dittmar, 1977; Goldman & Hewitt, 1976; Goldman & Richards, 1974). For all reviewed studies combined, the average correlation for white students was 0.342, accounting for an average of 11.7% of the variance in grades. A study by Pennock-Roman (1990) is the only one reporting relatively low average correlations of 0.243 (5.9% of the variance) for white students in three public and three private institutions.

The evidence for black students in predominantly white schools is more complicated. The few reports available for black students yield variable and contradictory results. Morgan (1990) reported substantial correlations among four to five thousand black students at three different time periods, averaging 0.368 (13.6% of the variance). Breland's (1978) extensive research lead him to conclude that test scores predict similarly for black and white students. Pfeiffer and Sedlacek (1971) concurred.

TABLE 1A
SAT Validity Coefficients for White Students

Study	Correlation	% Variance	Strength of <i>r</i>
1. Fincher (1984)	0.490	24.0%	moderate
2. Ford & Campos (1977; 783 colleges):			
SATM	0.320	10.2%	moderate
SATV	0.370	13.7%	moderate
3. Wilson (1980; <i>n</i> = 961):			
SATM	0.388	15.1%	moderate
SATV	0.392	15.4%	moderate
4. Wilson (1981; <i>n</i> = 1102):			
SATM	0.301	9.1%	moderate
SATV	0.338	11.4%	moderate
5. Fleming & DuBois (1981; <i>n</i> = 62)	0.410	16.8%	moderate
6. Willingham & Breland (1982; <i>n</i> = 4693)	0.420	17.6%	moderate
7. Goldman & Richards (1974; <i>n</i> = 210):			
SATM	0.370	13.7%	moderate
SATV	0.400	16.0%	moderate
8. Goldman & Hewitt (1976; <i>n</i> = 4259)			
SATM	0.210	4.4%	weak
SATV	0.300	9.0%	moderate
9. Pennock-Roman (1990):			
California 1 (private institution; <i>n</i> = 898):			
SATM	0.240	5.8%	weak
SATV	0.370	13.7%	moderate
California 2 (public institution; <i>n</i> = 1304):			
SATM	0.190	3.6%	weak
SATV	0.290	8.4%	weak
Texas (public institution; <i>n</i> = 4347):			
SATM	0.330	10.9%	moderate
SATV	0.310	9.3%	moderate
Florida (public institution; <i>n</i> = 2565):			
SATM	0.210	4.4%	weak
SATV	0.220	4.8%	weak
Massachusetts (private institution; <i>n</i> = 4473)			
SATM	0.290	8.4%	weak
SATV	0.310	9.3%	moderate
New York (private institution; <i>n</i> = 2033)			
SATM	0.090	0.8%	weak
SATV	0.060	0.4%	weak
10. Dittmar (1977)			
1974 (<i>n</i> = 218):			
SATM	0.439	19.3%	moderate
SATV	0.421	17.7%	moderate
1975 (<i>n</i> = 254):			
SATM	0.410	16.8%	moderate
SATV	0.378	14.3%	moderate
11. Ramist, Lewis, McCamley-Jenkins (1994)	0.420	17.6%	moderate
12. Morgan (1990)			
1978 (<i>n</i> = 89,013):			
SATM	0.500	25%	strong
SATV	0.520	27%	strong
1981 (<i>n</i> = 89,524):			
SATM	0.490	24%	moderate
SATV	0.490	24%	moderate
1985 (<i>n</i> = 74,586):			
SATM	0.310	9.6%	moderate
SATV	0.300	9%	moderate
Average	0.342	11.7%	

TABLE 1B
SAT Validity Coefficients for Black Students

Study	Correlation	% Variance	Strength of <i>r</i>
BLACK STUDENTS IN WHITE COLLEGES:			
1. Miller & O'Connor (1969):			
Females, 1964	0.480	23.0%	moderate
Females, 1965	0.440	19.4%	weak
2. Wilson (1980; <i>n</i> = 270):			
SATM	0.410	16.8%	moderate
SATV	0.371	13.8%	moderate
3. Wilson (1981; <i>n</i> = 115):			
SATM	0.191	3.6%	weak
SATV	0.236	5.6%	weak
4. Fleming & DuBois (1981); <i>n</i> = 96	-0.010	0.01%	weak
5. Ramist, Lewis & McCamley-Jenkins (1994)	0.300	9.0%	moderate
6. Goldman & Hewitt (1976; <i>n</i> = 272)			
SATM	0.180	3.2%	weak
SATV	0.280	7.8%	weak
7. Hedges & Majer (1976)			
(<i>n</i> = 161 unidentified minorities)			
SATM	0.315	9.9%	moderate
SATV	0.250	6.3%	weak
8. Morgan (1990):			
1978 (<i>n</i> = 5,162):			
SATM	0.430	18.5%	moderate
SATV	0.430	18.5%	moderate
1981 (<i>n</i> = 4,086):			
SATM	0.350	12.3%	moderate
SATV	0.330	10.9%	moderate
1985 (<i>n</i> = 5,095):			
SATM	0.350	12.3%	moderate
SATV	0.320	10.2%	moderate
STUDIES WITHOUT COEFFICIENTS:			
Pfeiffer & Sedlacek (1971)			
Temp (1971)			
Goldman & Hewitt (1976)			
Dalton (1976)			
Boyd (1977)			
Breland (1978)			
Houston (1983)			
Average	0.315	9.9%	
BLACK STUDENTS IN BLACK COLLEGES:			
1. Morehouse College (1984)			
SATM	0.480	23%	moderate
SATV	0.410	16.8%	moderate
2. Xavier University (1984)	0.610	37.2%	strong
3. Ramist, Lewis, & McCamley-Jenkins (1994)	0.380	14.4%	moderate
4. Fleming (1990):			
Spelman (<i>N</i> = 641)	0.341	11.6%	moderate
Morris Brown (<i>N</i> = 159)	0.395	15.6%	moderate
Xavier (<i>N</i> = 535)	0.565	31.9%	strong
Tougaloo (<i>N</i> = 70)	0.555	30.8%	strong
Texas Southern (<i>N</i> = 146)	0.424	18%	moderate
Average	0.462	21.3%	
Grand Average	0.362	14.7%	

Hedges and Majer (1976) found higher correlations for SATM (0.315) than SATV (0.250), 9.9% and 6.3% of the variance respectively. Goldman and Hewitt (1976) reported relatively low correlations for both SATM and SATV of 0.180 and 0.280, respectively (3.2% and 7.8%). Ramist's comprehensive study of blacks in 11 white colleges showed that although the range of scores for blacks and whites was similar, the level of prediction was substantially less for black students. On the average, black SAT scores correlated 0.300 (9%) with freshman grades; similar scores for white students were 0.420 (17.6%), a differential of 8.6%. Wilson conducted two studies of minority student (half of whom were black) prediction to grades from test scores. In a state university, Wilson (1980) found that the math and verbal SAT correlated 0.410 and 0.371, respectively, with college grades (16.8% and 13.8%), a better level of prediction than found for non-minorities. However, in a second study at an elite university, Wilson (1981) found a much lower level of prediction for minorities, that is, correlations of 0.191 and 0.236 for math and verbal scores, respectively (3.6% and 5.6%). Miller and O'Connor (1969) found that SAT scores did not predict freshman grades at all for their sample of black males at the University of Michigan, although correlation coefficients were not given. For one entering class of black women, the correlation for SAT and grades was 0.440 (19.4%), but for black women in the next entering class, the correlation was 0.100 (1%). Similarly, Fleming and DuBois (1981) reported that SAT scores did not correlate significantly at all with grades among black students at New York University ($r = -0.01$; 0.01%), whereas correlations were in the usual range for white students (i.e., 0.410).

Other studies for which validity coefficients were not available also reported difficulties using test scores to predict college grades. Houston (1983) reported problems in underprediction. A number of authors have found that overprediction was a consistent problem (Temp, 1971; Breland, 1978; Crouse & Trusheim, 1988; Nettles, Thoeny & Gosman, 1990). Dalton (1976) viewed the combination of high-school rank and SAT scores to be of limited usefulness in predicting the academic success of black students. Boyd (1977) studied black and Hispanic students at 20 highly selective colleges and concluded that their success in these institutions could not be predicted by the SAT score alone.

From the available studies that do report validity coefficients, the average correlation for black students is 0.315, accounting for an average of 9.9% of the variance (compared to 11.7% for white students, a minor difference of 1.8%). It does, however, appear that the level of prediction from test scores to college grades is highly variable among black students, ranging from -0.01 to 0.48 (from 0.01% to 23% of the variance), variability that has never been adequately explained. Despite the mini-

mal difference in average correlations, variable findings such as these have lead to a widespread belief that standardized test scores are either invalid for black students or fail to measure important abilities. Eight studies of Latino students report relatively low correlations, ranging from -0.080 to 0.370, with an average of 0.232, accounting for 5.4% of the variance (Morgan, 1990; Pennock-Roman, 1990; Duran, 1986; Breland, 1978; Dittmar, 1977; Goldman & Hewitt, 1976; Lowman & Spuck, 1975; Goldman & Richards, 1974).

Note, however, that all of the previous studies of black students were conducted among students attending predominantly white schools. Indeed, when the validity of the SAT for black students in black schools was examined from the few reports available, a more consistent picture of SAT score prediction emerged. Ramist's aforementioned study at the Educational Testing Service included 11 black colleges. Although psychometricians are concerned over the restricted range of test scores at black colleges, the pattern of prediction is nonetheless similar to that of white students in white colleges: SATs correlated 0.38 with freshman grades (14.4% of the variance). An unpublished report by predominantly black Morehouse College (1984) found that math and verbal SATs correlated 0.480 and 0.410 with freshman grades (23% to 16.8%). Xavier University (1984), another predominantly black institution, found that the SAT correlated 0.610 with grades among its freshmen after three semesters (37.2%). Also, for 1982 graduates in arts and sciences, the ACT correlated 0.500 with grades (25%). Fleming (1990), in the only published report available, found that the SAT (or ACT equivalent) provided consistently good prediction to grades, from 0.341 to 0.565 (11.6% to 31.9%), in five black colleges that provided official records for all students who had taken standardized tests, with an average correlation of 0.456 (20.8%). Across studies, the average correlation was 0.462, accounting for an average of 21.3% of the variance (that is, 9.6% better than for white students, and 11.4% better than for blacks in white schools).

Thus, previous research indicates that SAT scores predict grades for black students better if those students attend predominantly black schools than if they attend predominantly white schools. However, previous research has rarely examined predictive validity in both kinds of schools in the same study using the same methods, thus posing problems for comparing validity coefficients. The Ramist et al. (1994) study is the only exception. Therefore, studies using different methods and widely varying numbers of subjects become the only basis for comparison. Although ETS researchers are in the best position to use all available data from a school population, they often do not investigate comparisons of

interest to other researchers. Thus, the present study presents correlations for standardized tests and grades for samples of black students in 15 colleges, 7 predominantly black and 8 predominantly white. It also presents correlations for white students in 3 of the predominantly white colleges. It was hypothesized that (a) correlation coefficients would be higher for black students in predominantly black colleges; (b) correlation coefficients would be more variable for black students in predominantly white schools, and (c) correlation coefficients for white students would be higher than for black students in predominantly white schools; (d) there would be no difference in the correlation coefficients for white students in white colleges and for black students in predominantly black colleges.

Method

Subjects

Subjects for the study were students in Fleming's (1984) study of *Blacks in College*, recruited by a series of procedures designed to produce a high volunteer rate. Of the 2,979 students in the original subject pool, standardized test scores were available for 1,843 students (62% of the sample); transcripts were available for 2,711 (91% of the sample); and both were available for 1774 freshmen and seniors, a 40% reduction in sample size that reflects the difficulty of recruiting students who had taken college entrance exams. There were 746 black students in 7 black schools, including 543 freshmen (229 males and 314 females) and 203 seniors (85 males and 118 females); 739 black students in 8 white schools, including 526 freshmen (200 males and 326 females) and 213 seniors (88 males and 125 females). There were also 289 white students in 3 white schools, including 204 freshmen (124 males and 80 females) and 85 seniors (54 males and 31 females). Although the numbers of seniors became quite small in a number of schools, analyses for them are presented for the sake of thoroughness in an area of research where few studies are available. Table 2 presents a breakdown of subjects by school, class, sex, and race.

Procedure

During the initial testing session, students completed a registrar release form allowing the release of their transcripts and standardized test scores. Because both SAT and ACT scores were used by some colleges (primarily in Texas and Mississippi), ACT scores were converted to their SAT equivalents according to a formula made available by the American College Testing Program (Langston & Watkins, 1976), and updated by

TABLE 2
Subject Breakdown by School, Class, Sex and Race

School	Male		Female		Total N
	Freshmen	Seniors	Freshmen	Seniors	
BLACK STUDENTS IN BLACK SCHOOLS:					
Spelman	0	0	68	40	108
Morehouse	78	31	0	0	109
Clark	20	2	69	12	103
Texas Southern	57	22	68	22	169
Tougaloo	19	6	52	14	91
Wilberforce	33	7	46	7	93
Central State	22	17	11	23	73
Total	229	85	314	118	746
BLACK STUDENTS IN WHITE SCHOOLS:					
Emory	5	6	13	12	36
University of Georgia	22	11	41	15	89
Georgia Tech	39	11	21	0	71
Georgia College	6	6	36	19	67
University of Houston	37	15	93	30	175
Millsap	10	12	17	7	46
University of Dayton	27	22	42	23	114
Ohio State University	54	5	63	19	141
Total	200	88	326	125	739
WHITE STUDENTS IN WHITE SCHOOLS:					
Georgia Tech	53	28	8	7	96
University of Houston	33	5	28	9	75
University of Dayton	38	21	44	15	118
Total	124	54	80	31	289
Grand total	553	236	720	274	1774

Marco and Abdel-Fattah (1991). Two measures of academic performance were used for this set of analyses: overall grade point average and cumulative grade point average for the spring semester. For coding purposes, a 4-point system was used uniformly, and differential weighting of letter grades was discarded. Standardized test scores were correlated with semester GPA and cumulative GPA. Correlations were examined for all students, freshmen (males and females), and seniors (males and females).

Treatment of Data

Correlations for SAT (or ACT equivalents) and semester GPA and cumulative GPA were computed for all students, freshmen, freshmen males, freshmen females, seniors, senior males, and senior females. These analyses were performed separately for black and white students.

For each set of analyses, the following statistics were also computed: (a) the average correlation coefficient within black schools, white schools, and for white students; (b) the average estimate of variance accounted for; (c) the average standard deviation of the correlation coefficient; (d) independent *t*-test comparisons for mean differences in the correlation coefficients for black schools and white schools ($n = 15$), and comparison of blacks in white schools and with white students ($n = 11$); (e) Levene's test for differences between variances; and (f) the correlation between the SAT/ACT-GPA correlation coefficient and mean SAT (or ACT equivalent) score for each sample, and number of subjects.

Please note that pooling course grades into a composite GPA with no control for comparability of courses can diminish predictive validity (Ramist, Lewis, & McCamley-Jenkins, 1994). However, the problem proved to be minimized with African American students. Also note that there was no correction for restriction of range of test scores, which may underestimate the size of the predictive validity coefficients (see Ramist et al., 1984).

Results

Black Students in Black and White Schools

All students. For all students combined, with an average sample size of 99 (121 in black schools, and 96 in white schools), validity coefficients were higher for black students in black schools, but the differences in prediction were not great. Table 3 shows that average correlations for semester GPA were 0.347 for students in black schools, compared to 0.288 for students in white schools; the difference in average variance accounted for only 3.7%. Similarly, average correlations for the cumulative GPA were 0.359 and 0.326, respectively; the difference in average variance accounted for was only 2.3%. Furthermore, there were no significant differences in variability of the correlations. The mean SAT scores of black students in white schools were significantly higher than those of counterparts in black schools ($t = 2.55$, $p < 0.05$), indicating that size of the validity coefficient appears not to vary with the mean SAT (ACT) scores of the sample.

Freshmen. Freshmen constituted 72% of the sample and produced an average sample size of 71: 78 for students in black schools and 66 for blacks in white schools. When they were considered alone, students in black schools produced correlations now substantially better than for students in predominantly white colleges. Table 4 shows that the average correlation for semester GPA was 0.397 for students in black schools, compared to 0.304 for students in white schools; the difference in aver-

TABLE 3

Correlations for SAT with Semester GPA and Cumulative GPA for All Students

Schools	N	Mean SAT	r with Semester GPA	r with Cumulative GPA
BLACK SCHOOLS:				
Spelman	108	782	0.323***	0.434***
Morehouse	109	799	0.533***	0.567***
Clark	103	699	0.339***	0.352***
Texas Southern	169	611	0.341***	0.386***
Tougaloo	191	673	0.365***	0.423***
Wilberforce	93	569	0.291**	0.030
Central State	73	602	0.234*	0.321**
Average	121	676	0.347 (12%)	0.359 (12.9%)
WHITE SCHOOLS:				
Emory	36	957	0.429**	0.241
University of Georgia	89	830	0.061	0.230*
Georgia Tech	71	1018	0.287*	0.398***
Georgia College	67	634	0.385***	0.333**
University of Houston	199	758	0.399***	0.379***
Millsap	46	900	0.195	0.307*
University of Dayton	116	846	0.166	0.347***
Ohio State	143	679	0.383***	0.374***
Average	96	828	0.288 (8.3%)	0.326 (10.6%)
WHITE STUDENTS IN WHITE SCHOOLS:				
Georgia Tech	97	1192	0.390***	0.486***
University of Houston	76	1025	0.159	0.159
University of Dayton	118	1005	0.357***	0.384***
Average	97	1074	0.302 (9.1%)	0.343 (11.8%)

NOTE: Variance accounted for in parentheses.

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

age variance accounted for was a substantial 6.6%. Corresponding figures for the cumulative GPA were 0.371 and 0.310, respectively, with a 4.2% difference in average variance accounted for. However, these differences were not significant in the 15-sample analysis, nor were there significant differences in variability. In terms of both numbers of subjects, averaging 71 students in each school, and consistency of academic experience, this analysis may be the most valid. The validity coefficients, especially for semester GPA, were sufficiently different to suggest that racial composition of the college environment may play some role in the translation of test score potential into academic performance.

Freshman males. The greatest differences in test score prediction appeared after splitting the freshman sample by sex, with males in black

TABLE 4
Correlations for SAT and Semester and Cumulative GPA for Freshmen

Schools	N	Mean SAT	r with Semester GPA	r with Cumulative GPA
BLACK SCHOOLS:				
Spelman	68	772	0.490***	0.519***
Morehouse	78	800	0.543***	0.543***
Clark	89	699	0.332**	0.351**
Texas Southern	125	611	0.434***	0.422***
Tougaloo	71	659	0.396***	0.410***
Wilberforce	79	566	0.348**	-0.015
Central State	33	611	0.239	0.364*
Average	78	67	0.397 (15.8%)	0.371 (13.8%)
WHITE SCHOOLS:				
Emory	18	922	0.420	0.228
University of Georgia	63	845	0.143	0.260*
Georgia Tech	60	1008	0.357**	0.394**
Georgia College	42	618	0.375*	0.261
University of Houston	130	735	0.312***	0.312***
Millsap	27	896	0.269	0.312
University of Dayton	69	841	0.211	0.370**
Ohio State	117	664	0.347***	0.346***
Average	66	816	0.304 (9.2%)	0.310 (9.6%)
WHITE STUDENTS IN WHITE SCHOOLS:				
Georgia Tech	61	1192	0.411***	0.545***
University of Houston	61	1023	0.144	0.166
University of Dayton	82	1101	0.338**	0.330**
Average	68	1105	0.298 (8.9%)	0.347 (12%)

NOTE: Variance accounted for in parentheses.

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

schools producing much higher validity coefficients. Males constituted 40.1% of the freshman sample, with an average sample size of 29: 38 in black schools and 25 in white schools. Table 5 shows that for semester GPA, the average correlation for freshman males in black schools was 0.436, compared to 0.219 for freshman males in white schools. The difference in average variance accounted for was quite high, that is, 14.2%. Indeed, the difference in average correlations approaches significance, even in the small sample of 15 cases ($t = 2.05$, $p = 0.065$), and it is the only comparison of means among black students that does approach significance. Furthermore, the correlations for black freshman males in white schools were significantly more variable than those for black males in black schools, including two negative correlations. Levene's

TABLE 5
Correlations for SAT and Semester and Cumulative GPA for Freshmen Males

Schools	N	Mean SAT	r with Semester GPA	r with Cumulative GPA
BLACK SCHOOLS:				
Clark	20	705	0.540**	0.614**
Morehouse	78	800	0.543***	0.543***
Texas Southern	57	592	0.482***	0.493***
Tougaloo	19	722	0.490*	0.500*
Central State	22	622	0.259	0.428***
Wilberforce	33	542	0.299	-0.101
Average	38	664	0.436 (19%)	0.413 (17.1%)
WHITE SCHOOLS:				
Emory	5	942	-0.001	-0.565
University of Georgia	22	869	0.068	0.156
Georgia Tech	39	1014	0.470**	0.504***
Georgia College	6	657	0.610	0.686
University of Houston	37	802	0.256	0.230
Millsaps	10	897	0.000	-0.079
Ohio State	54	687	0.431***	0.457***
University of Dayton	27	842	-0.080	0.007
Average	25	839	0.219 (4.8%)	0.175 (3.1%)
WHITE STUDENTS IN WHITE SCHOOLS:				
Georgia Tech	53	1202	0.436***	0.572***
University of Houston	33	1058	0.050	0.044
University of Dayton	38	1016	0.385*	0.386*
Average	41	1092	0.290 (8.4%)	0.334 (11.2%)

NOTE: Variance accounted for in parentheses.

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

test for unequal variances was significant ($F = 6.63$, $p < 0.05$), the only significant difference in variances among black students found in the study. For the cumulative GPA, the average correlation for black schools was 0.413, compared to 0.175 for white schools, with an average differential of 14%, a substantial but not significant difference. In this case, neither the difference in average correlations nor variances approached statistical significance. Unfortunately, the validity of these coefficients is reduced by the small sample sizes, averaging 31 students, but ranging from 5 to 43 subjects. One of the negative correlations for black males in white schools was a substantial -0.565, but it was based on only 5 subjects. However, the trends for freshmen, if confirmed, would indicate that the role played by racial composition of the college environment

maximizes test score prediction in black schools but is least favorable to test score prediction among black males in white schools.

Freshman females. Freshman females produced a reversal of the previous trends, producing better correlations in predominantly white schools. Average sample size was 46: 52 in black schools, and 41 in white schools. Table 6 shows that the average correlation for semester GPA for black freshman females in black schools was 0.334, *slightly lower* than the average of 0.338 found for freshman females in white schools. The average differential for semester GPA was only 0.2% of the variance. However, for cumulative GPA, the average correlation for freshman females in black schools was 0.280, *substantially lower* than the average of 0.380 found for black freshmen females in white schools. In this case, the difference in average variance accounted for was a note-

TABLE 6
Correlations of SAT and Semester and Cumulative GPA for Freshmen Females

Schools	N	Mean SAT	r with Semester GPA	r with Cumulative GPA
BLACK SCHOOLS:				
Spelman	68	772	0.490***	0.519 ***
Clark	69	697	0.241 *	0.234 *
Texas Southern	68	627	0.395 ***	0.376 **
Tougaloo	52	636	0.409 **	0.439 ***
Wilberforce	46	581	0.365 **	0.015
Central State	11	592	0.104	0.099
Average	52	651	0.334 (11.2%)	0.280 (7.8%)
WHITE SCHOOLS:				
Emory	13	913	0.631 *	0.623 *
University of Georgia	41	832	0.258	0.344 *
Georgia Tech	21	997	0.051	0.144
Georgia College	36	610	0.312~*	0.206
University of Houston	93	708	0.357 ***	0.373 ***
Millsap	17	895	0.383	0.472~*
University of Dayton	42	840	0.387 **	0.568 ***
Ohio State	63	645	0.328 *	0.306 *
Average	41	805	0.338 (11.4%)	0.380 (14.4%)
WHITE STUDENTS IN WHITE SCHOOLS:				
Georgia Tech	8	1129	-0.155	-0.139
University of Houston	28	981	0.460 **	0.499 **
University of Dayton	44	1006	0.298 *	0.282
Average	27	1039	0.201 (4%)	0.214 (4.6%)

NOTE: Variance accounted for in parentheses.

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

worthy 6.6%, indicating better prediction for black women in white schools, although the difference was not statistically significant in the 15-sample study. The mean SAT scores were higher for black freshman females in white schools, compared to those in black schools ($t = 2.49$, $p < 0.05$, $n = 14$).

Seniors. By the senior year differences in predictive validity seem to be minimized, and the advantage to students in black schools is less clear-cut. The average sample size was 28: 29 for blacks in black schools and 27 for blacks in white schools. Table 7 shows that the average correlation for semester GPA for black seniors in the black schools was 0.231, now *lower* than the average correlation of 0.248 found for black seniors in white schools. The difference in average variance ac-

TABLE 7
Correlations of SAT and Semester and Cumulative GPA for Seniors

Schools	N	Mean SAT	r with Semester GPA	r with Cumulative GPA
BLACK SCHOOLS:				
Spelman	40	801	-0.036	0.140
Clark	14	696	0.565*	0.438
Morehouse	31	797	0.515**	0.667***
Texas Southern	44	608	0.144	0.358
Tougaloo	20	726	0.255	0.494*
Wilberforce	14	588	-0.058	-0.423
Central State	40	594	0.247	0.273
Average	29	688	0.231 (5.3%)	0.386 (14.9%)
WHITE SCHOOLS:				
Emory	18	993	0.389	0.243
University of Georgia	26	793	0.008	0.189
Georgia Tech	11	1053	0.062	0.567
Georgia College	25	665	0.310	0.382
University of Houston	45	802	0.464**	0.395**
Millsap	19	896	0.196	0.394
University of Dayton	45	857	0.079	0.287~*
Ohio State University	24	753	0.472*	0.323
Average	27	852	0.248 (6.2%)	0.348 (12.1%)
WHITE STUDENTS IN WHITE SCHOOLS:				
Georgia Tech	35	1192	0.457**	0.509**
University of Houston	14	1022	0.369	0.498
University of Dayton	36	994	0.402*	0.500**
Average	28	1069	0.409 (16.7%)	0.502 (25.2%)

NOTE: Variance accounted for in parentheses.

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

counted for was only 0.9%, but the departure from overall trends is striking. Average correlations for cumulative GPA, however, indicated a minimal difference between black seniors in black and white schools in favor of black schools, that is, 0.386 for those in black schools and 0.348 for those in white schools. The average differential was 2.8% of the variance. Also note that the size of the validity coefficients produced in the senior year (i.e., with semester GPA) are relatively low, suggesting that the SAT exerts a smaller influence on academic performance at this stage among black students. Obviously the larger correlations produced by the cumulative GPA are due to a longer history beyond the second semester of the senior year.

Senior males and females. To further break down the senior sample stretches the limits of validity, but doing so reveals two trends: a reversal of the findings found for freshmen in both males and females and attenuated SAT score differences among senior males. For senior males, the average number of subjects in each school was 12: 14 for blacks in black schools and 11 for blacks in white schools. Surprisingly, Table 8 shows that better correlations in white schools were accounted for by males rather than females. The average correlation for semester GPA among senior black males in black schools was 0.221, slightly *lower* than the 0.270 average correlation for senior black males in white schools; the difference in average variance accounted for was 2.4%. However, unlike seniors in general, for cumulative GPA the average correlation of 0.288 was also lower for senior black males in black schools than the 0.358 for those in white schools; the difference in average variance accounted for was 4.5%. Mean SATs were higher for black students in white schools, compared to those in black schools, but the difference only approached significance ($t = 2.02$, $p = 0.066$, $n = 13$). (This is the only case in which the means in SAT scores were not significantly different and may account for the similarity in prediction.

For black females, the freshman advantage going to those in white schools was not the case among the seniors. Average sample size was 17: 20 for black females in black schools and 18 for black females in white schools. Table 9 shows that the average correlation for black senior females in black schools was 0.338; for black females in white schools it was a lower 0.322. However, the difference in average variance accounted for was only 1%. For cumulative GPA, the average correlation of 0.339 was higher for black senior females in black schools than the 0.300 for those in white schools. This time, the difference in average variance estimates was still a small 2.5%. The mean SAT was higher for black females in white schools compared to those in black schools ($t = 2.85$, $p < 0.05$, $n = 13$). Apparently, the factors influencing

TABLE 8

Correlations of SAT and Semester and Cumulative GPA for Senior Males

Schools	N	Mean SAT	r with Semester GPA	r with Cumulative GPA
BLACK SCHOOLS:				
Morehouse	31	797	0.515 ***	0.667 ***
Clark	2	870	—	—
Texas Southern	22	608	0.144	0.358
Tougaloo	6	765	-0.049	0.321
Wilberforce	7	566	0.114	-0.322
Central State	17	610	0.353	0.416 ~*
Average	14	703	0.221 (4.9%)	0.288 (8.3%)
WHITE SCHOOLS:				
Emory	6	997	0.190	0.035
University of Georgia	11	853	0.494	0.114
Georgia Tech	11	1053	0.062	0.567 ~*
Georgia College	6	653	0.448	0.454
University of Houston	15	820	0.535 *	0.323
Millsap	12	838	0.481	0.536 ~*
University of Dayton	22	813	-0.061	0.173
Ohio State	5	718	0.010	0.660
Average	11	843	0.270 (7.3%)	0.358 (12.8%)
WHITE STUDENTS IN WHITE SCHOOLS:				
Georgia Tech	28	1175	0.441 *	0.469 *
University of Houston	5	995	0.388	0.561
University of Dayton	21	977	0.212	0.213
Average	18	1049	0.347 (12%)	0.414 (17%)

NOTE: Variance accounted for in parentheses.

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

black males and females differentially in the freshman year are reversed among seniors. Although the senior differences are very small in terms of variance accounted for, they do indicate the presence of different conditions. The smallness of the sample sizes may well compromise the importance of the conclusions, but they may also provide direction for future research.

Comparing White and Black Students in Predominantly White Schools

All students. Comparisons of white students in 3 of the white schools and black students in 8 white schools generally show better correlations for white students, but only slightly better (see Table 3). Average sample size was 96: 97 for white students and 96 for blacks in white schools.

TABLE 9
Correlations of SAT and Semester and Cumulative GPA for Senior Females

Schools	N	Mean SAT	r with Semester GPA	r with Cumulative GPA
BLACK SCHOOLS:				
Spelman	40	801	0.140	-0.036
Clark	12	668	0.592 *	0.467
Texas Southern	22	614	0.109	0.135
Tougaloo	14	709	0.690 **	0.463 ~*
Wilberforce	7	619	0.377	0.765 *
Central State	23	581	0.120	0.240
Average	20	665	0.338 (11.4%)	0.339 (11.5%)
WHITE SCHOOLS:				
Emory	12	991	0.565 ~*	0.395
University of Georgia	15	749	-0.163	0.427
Georgia Tech	—	—	—	—
Georgia College	19	668	0.274	0.362
University of Houston	30	793	0.455*	0.494**
Millsap	7	994	0.688 ~*	-0.033
University of Dayton	23	899	-0.068	0.167
Ohio State	19	763	0.500 *	0.290
Average	18	837	0.322 (10.4%)	0.300 (9%)
WHITE STUDENTS IN WHITE SCHOOLS:				
Georgia Tech	7	1259	0.739 ~*	0.683 ~*
University of Houston	9	1037	0.328	0.463
University of Dayton	15	1018	0.687 **	0.791 **
Average	10	1105	0.585 (34.2%)	0.648 (50%)

NOTE: Variance accounted for in parentheses.
* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

For semester GPA the average correlation of 0.302 was better for white students, compared to 0.288 for black students in white schools, but the differential in average variance accounted for was only 0.8%. For cumulative GPA, the average correlation of 0.343 for white students was also slightly better than the 0.326 for black students, but the differential in average variance accounted for was still only 1.2%. There were no significant differences in average correlations or variances. The mean SAT scores for white students were significantly higher than those of blacks in white schools ($t = 2.87$; $p < 0.05$).

Freshmen. Among freshmen, the differences between black and white students were also slight, but whether white or black students produced higher correlations depended on the measure of GPA used (see Table 4). The average number of subjects was 66: 68 for white students and 66 for

blacks in white schools. For white students the average correlation for semester GPA was 0.298, slightly *lower* than the 0.304 found for blacks in white schools, but the differential in average variance accounted for was only 0.3%. For cumulative GPA, the average correlation for white students was 0.347, *higher* than the 0.310 for black students in white schools, but the average differential was a small 2.4%. The mean SAT scores of white freshmen were higher than those for black freshmen in white schools ($t = 3.44, p < 0.01$).

Freshman males. Among freshman males, the correlations for white students were higher, but this time the differences were substantial (see Table 5). The numbers of freshman males were relatively small, averaging 29: 41 for white males, and 25 for black males in white schools. For freshman white males the average correlation with semester GPA was 0.290, higher than the 0.219 for black males in white schools. The average difference in variance accounted for was 3.7%. For cumulative GPA, the average correlation for white males was 0.334, considerably higher than the 0.175 for black freshman males in white schools. In this case, the difference in variance accounted for was a substantial 8.1%. The difference did not, however, reach statistical significance in the comparison of 11 cases. The mean SAT scores of white students were significantly higher than those of black students in white schools ($t = 3.21, p = 0.01$).

Freshman females. Among freshman females, a reversal occurred; correlations were substantially higher for black females (see Table 6). The average number of subjects was 37: 27 for white females in white schools and 41 for black freshman females in white schools. For white freshman females the average correlation for semester GPA was 0.201, *lower* than the 0.338 for black females in white schools; the difference in average variance accounted for was 7.4%. The average correlation for white freshman females for cumulative GPA was 0.214, even *lower* than the 0.380 for black females in white schools. This time, the difference in variance accounted for was a noteworthy 9.8%. These trends toward better prediction for black women compared to white women in white schools were not statistically significant in the sample of 11 schools. The mean SAT for white freshman female students was higher than that for black freshman females in white schools ($t = 2.73, p < 0.05, n = 11$).

Seniors. The average differential estimates increase significantly when comparing white seniors and black seniors in white schools (see Table 7). The average sample size was 27: 28 for white students and 27 for blacks in white schools. For semester GPA the average correlation for white seniors was 0.409, much higher than the 0.248 for blacks in white schools. The difference in variance accounted for was 10.5%. Similarly, for cumulative GPA, the average correlation for white seniors was 0.502, whereas the average correlations for black seniors in white

schools was only 0.248. In this case the average differential variance estimate was 13.1%. The mean SAT for white students was higher than that for blacks in white schools ($t = 2.62, p < 0.05, n = 11$).

Senior males. Among seniors, white males produced higher correlations, but the differences were small (see Table 8). Average number of subjects in each sample was 13: 18 for white senior males and 11 for black seniors males in white schools. The average correlation for semester GPA for white senior males was 0.347, higher than the 0.270 for black senior males in white schools; the difference in variance accounted for was 4.7%. In this case, however, the correlations for black males were significantly more variable than those for white males ($F = 7.86, p < 0.05, n = 11$). White senior males also had a higher average correlation of 0.414 for cumulative GPA, compared to 0.358 for black senior males in white schools. The average differential in variance accounted for was not substantial: 4.4%. The mean SAT was higher for white senior males compared to black senior males ($t = 2.40, p < 0.05, n = 11$).

Senior females. The most dramatic differences were found between the higher correlations of white senior females compared to those of black senior females in white schools (see table 9). The average number of subjects in each sample was 14: 10 for white senior females, and 18 for black senior females in white schools. The average correlation for semester GPA for white females was 0.585, much higher than the 0.322 average correlation found for black senior females in white schools; the difference in average variance accounted for was 25.2%. For cumulative GPA the average correlation for white senior females was 0.648, again much higher than the 0.300 found for black senior females in white schools, producing the highest difference in average variance accounted for in the study, that is, 33%. This difference in mean correlations was also statistically significant ($t = 2.82, p < 0.04, n = 10$). The mean SAT was higher for white females than for black females in white schools ($t = 3.02, p < 0.05, n = 10$).

Discussion

Charges that standardized tests are unfair to African American students persist because of wide variation in predictive validity as well as problems with lack of prediction, underprediction, and overprediction. But several studies suggest that standardized test scores predict academic performance much better for black students who attend predominantly black colleges, with the same consistency and level of prediction usually found for white students (see Fleming, 1990). However, previous research rarely includes data from black students in both kinds of schools in the same study, introducing a source of comparative error.

Consequently, the present study examined validity coefficients for black students in 8 predominantly white and 7 predominantly black colleges. Overall, the investigation found that average validity coefficients for cumulative grades were: (1) 0.326 for black students in the white schools, i.e., 10.6% of the variance compared to 9.9% found in eight previous studies; (2) 0.359 for black students in the black schools, i.e., 12.9% of the variance compared to 21.3% in four previous studies; and (3) 0.343 for white students, i.e., 11.8% of the variance compared to 11.7% in twelve previous studies. Although the average validity coefficients for black students in black schools were higher than they were for blacks in white colleges, the average differences of 2.3% and 3.7% of the variance accounted for (in semester and cumulative grades) were small and hardly provided evidence for a case to argue differential predictive validity. The one exception found was for black freshman males. Freshman males in black schools produced significantly higher validity coefficients (i.e., a difference of 14% of the variance). Furthermore, coefficients for black freshman males in white schools were significantly more variable, including positive, negative, and zero-order correlations. An interesting but nonsignificant reversal occurred for black freshman females, who produced higher validity coefficients in predominantly white schools (differences of 0.2% and 6.6% of the variance). Better prediction for black females is consistent with numerous reports that black women have certain achievement advantages in predominantly white settings that are unavailable to black males (Fleming, 1983, 1984; Epstein, 1973; Feagin, 1970; Fichter, 1967; Bernard, 1966). Among seniors, differences were smaller, as were the numbers of subjects, but the coefficients were slightly higher for students in white schools (differences of 0.9% and 2.8%). Splitting the senior sample by sex revealed that black males in white schools accounted for the higher validity coefficients for black students in white schools generally (differences of 2.4% and 4.5%). In short, the overall trends indicate differences that are not great, but the overall trends also mask provocative sex differences in predictive validity.

How seriously should we take these findings, or rather, how valid are they? On one hand, the present data are derived from a 1984 study when black-white SAT scores were more divergent than they are today (e.g., Jones, 1984; Baratz-Snowden, 1987; Wainer, 1988; Ramist, Morgan, & Affleck, 1989). On the other hand, the present data are no older than many studies cited frequently in the standardized testing literature and, furthermore, provide an unusual opportunity to examine validity coefficients for black students in black and white schools. Unlike previous research for black students in black colleges, as well as institutional research that was able to examine validity coefficients for all students in

the school or in a given class, the present study was only able to examine coefficients from samples of students who had been recruited. This difference may well be a factor in the difference in average validity coefficients found for students in black schools between the present study and previous studies. When correlation coefficients from all available previous studies reviewed here were examined, the average variance accounted for was 11.4% greater for black students in black schools compared to black students in white schools (and 1.8% greater for white students compared to black students in white schools). It does seem, however, that estimates should not be excluded from consideration if they are based on samples of students rather than the entire population, and in this case the sampling limitation is offset by the advantage of having fifteen samples of approximately 100 students each. It poses a problem that the samples are not equally balanced for academic classification but are composed of 72% freshmen and 28% seniors. Nonetheless, the results were examined separately by class. Finally, it is problematic that some (i.e., 29%) of the scores, in Texas and Mississippi, were ACT scores requiring a conversion to SAT equivalents, so that parties interested in one test or the other may have concerns about the purity of the data. Suffice it to say that the present study is not perfect in possessing data based on entire classes of students, each of whom had taken only one variety of standardized test. Nonetheless, the present study does make a contribution in providing validity coefficients for a wide variety of black students in both black and white schools with good geographic representation and with possibilities for analysis by race, sex, and academic classification.

Previous research has also suggested that standardized tests predict academic performance better for white students than for black students. This study could only consider validity coefficients for white students in three colleges, so that the confidence placed in the findings is not the same as that for comparisons of black students. Nonetheless, the average correlations were generally better for white students, and this was particularly true in the senior year, due largely to the vastly (and significantly) better average correlations of senior white females compared to their black counterparts. There was, however, a substantial reversal among freshmen, in that black female freshmen in white schools produced better correlations than white female freshmen. Also, among freshmen, the correlations of black freshman males were more variable than those of white students. Thus, the overall trends in favor of white students mask sometimes dramatic differences by sex that suggest differential adjustment issues.

There are several issues raised by the findings that relate to the fairness of the SAT for African American students. The first is, does the

racial environment of the college make a difference in predictive validity of the SAT? The answer is that it depends on how you look at it. If you look at overall analyses where academic classification and sex are ignored, then racial environment of the college of matriculation appears to make very little difference. If you look at analyses of freshmen where sex is ignored, the differences are worth mentioning but not sufficient to support a serious contention of differential predictive validity. But if you examine freshman separately by sex, the data indicate that racial environment makes a considerable difference for black freshman males in white schools, whose validity coefficients were both lower and wildly variable, ranging from strong positive correlations to zero-order correlations to negative correlations. The variability is consistent with other reports of predictive validity for black males and is suggestive of situational interference in the translation of tested potential into academic outcomes. The problematic situation is not evident in the senior year, but given the high attrition rates for black males, especially in white schools, the present data may be on samples of the relatively few survivors of college. The freshman trends may well be symptomatic of the difficulty in surviving to the senior year.

The second issue is, does the fact that white students produce better correlations suggest that standardized tests are biased against black students? The answer is, again, it depends on how you look at it. Yes, the average overall correlations for white students were better, but these differences were insignificant until the senior year. When sex and year were considered, it does appear that black freshman males were at a disadvantage in terms of highly variable correlations, whereas black freshmen females displayed markedly better correlations than their white counterparts. By the senior year these differences were no longer present, while another equally dramatic scenario in favor of white females appeared. It is possible that the small numbers of subjects create trends that are not stable. It may also be that standardized tests reflect differential influences present in society as well as in college environment. Those trends change, depending on the particular school, sex, year, and race. Because these trends surface in other aspects of psychological investigation, they appear to be products of society rather than products of standardized tests alone.

Do these results shed light on the patterns of correlations found previously among black students, suggesting inconsistency? Indeed, the present study suggests at least three reasons: (1) the number of samples; (2) the composition of the sample; and (3) the number of subjects in the sample. The present study has relied on average correlations across 15 samples to determine trends in SAT prediction. However, looking at any given sample in the study would not necessarily reflect the nature of the

average trends. Furthermore, samples composed largely of black males in white schools would give the most inaccurate readings of general trends due to their special variability. Samples of black students in white schools were in general more variable, if not significantly so. Although the numbers of subjects was unrelated to the size of the correlations, small samples should be vulnerable to variable readings.

Does predictive validity vary with the mean SAT score? No. The mean SAT scores of white students were significantly higher than those of black students in white schools; and these were significantly higher than those of black students in black schools. Overall the average correlations were not greatly different between the groups, certainly not significantly so. Furthermore, black students in black schools, who had the lowest SAT scores, produced coefficients midway between black and white students in white schools. It appears that year and sex, but not race of school, are greater determinants of predictive validity than is mean SAT score. This is contrary to concerns expressed by psychometricians that lower means indicate constricted variability that results in lower predictive validity (Ramist et al., 1984).

Future research could examine the adjustment problems in the translation of the SAT into grades by race and sex. Specifically, research could consider correlating test scores with measures of academic adjustment to determine where interfering adjustment problems may lie.

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Alternative Models of Professorial Roles

New Languages to Reimagine Faculty Work

How should faculty members think about their work? I believe that language is the key to thinking about faculty roles, because language shapes images of faculty, limits what we can think about them, and creates legitimacy for the chosen images. My purpose here is to consider various roles for faculty members, not to prescribe them. I hope to provide alternate languages that faculty members and others can use to imagine new roles, new ways for faculty members to work. By "roles" I mean the expectations that faculty members have for themselves and the expectations that others have for them.

This is not an article about historical or sociological contexts and assumptions about faculty roles. I make the assertion that the language currently used at research universities to describe faculty work is constraining regardless of its source. It emphasizes quantity as opposed to quality, extrinsic as opposed to intrinsic characteristics of work, a lack of trust of faculty members, and an emphasis on the procurement of resources. The purpose of the article is to propose different languages to think about work. This scholarship involved finding examples of these languages on the premise that if faculty members can talk of their work in a new way, they can work in a new way.

It is often the unseen changes, changes that come upon us slowly, without even our knowing, that are most important. It is not the number

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of articles we have published, nor the complaints in the newspapers, nor the question of who is in charge, nor our changes in status, nor the number of budget lines in our departments. Each may be important, may draw attention to itself, make us angry or happy; but these are changes on the surface only.

More powerful changes take place when we talk about our lives at work in a different language. When a new language becomes pervasive, it reifies a new world. Our naming and identifying elements in that world make us imagine that no other world is possible. When I think about alternative models of the professorial role, I am thinking we need a new language to think about work. Only then can we reimagine what it is to be a faculty member.

The language of the academy, by which I mean research university, has changed. I don't know when the change occurred; in fact, I may have only a romantic notion that the language I want to use to describe university work ever existed. But I am sure that the language we now use is poison. Once, the undergraduate curriculum held the faculty together: we taught and students learned, and that was our main engagement. After the success of the Manhattan Project and other uses of science in World War II, the research hegemony arose. Undergraduates, once the chief focus of faculty attention, became fodder for the graduate research enterprise; universities became not just big business, but big businesses.

How do we talk about higher education now? This is the language I hear: efficiency, productivity, technology, credit hours generated, grants with overhead received, accountability, assessment, competition, costs, total quality management. This is not the language of education or morality or scholarship or learning or community; it is the language of counting, accountants, accountability and, to a greater or lesser extent, it is how we imagine our enterprise.

For example, in responsibility centered budgeting, centralized monies are allocated back to subunits that are productive in two ways: in generating credit hours and receiving research grants with overhead. There is pressure to increase the size of classes, whether learning is improved for students or not, and pressure to increase the scale of funded research, whether the research is driven by need for knowledge or not. In both cases, resources for the institution are increased. The institution becomes easier to manage, but whether student learning and disciplinary knowledge are improved by such activities is less certain.

The accountability movement has also heightened faculty awareness that they are being watched, judged, and expected to meet standards. In the best circumstances, the information generated from assessments helps to improve teaching and scholarship. Though helpful to some fac-

ulty, an emphasis on accountability shortens the timetables for producing scholarship. There are pressures to forego research that might take several years to complete in favor of scholarship that becomes trivial as faculty search for the smallest publishable unit on the shortest possible timeline.

A "standard" implies "one size fits all," but in academe the diversity of approaches to scholarship is enormous, and standardized practices often fail to produce the intended results. We need to acknowledge the complex context in which faculty are embedded. If we are to change our role, we should recognize what others expect of us, and if we ignore their desires, we should know why we do.

It would be convenient for faculty to believe that the language that we currently use comes from the administration. Some definitional issues should be approached. If we were analytical philosophers, we might never agree on a definition of faculty, or of administrators, or of people like department chairs, who are often faculty-administrators. I sidestep the issue by referring to role theory and defining administrators as those whose primary role is to support the academic enterprise (coordinating efforts and procuring and allocating resources) and faculty as those people whose primary role is to engage in academic endeavors (creating, distributing, and applying knowledge). Precision in definition is an intellectual game that dissuades us from confronting the issue at hand. No matter how we define faculty and distinguish them from administrators, the language used in the academy to describe faculty work has changed.

In earlier drafts of this article I was convinced that the administration was to blame for this change. But the issue may be similar to the Yeshiva and Boston University court decisions related to collective bargaining, in which faculty were found to have responsibilities similar to managers. In particular, faculty participate in setting rewards for other faculty members through peer evaluation and votes on promotion and tenure. Thus faculty have, through intention, collusion, or unwittingly, participated in changes in the language that currently describes faculty roles. The question is not, "Where did the language we currently use come from?" but "What are the consequences of using different languages to talk about faculty work?"

Although the administration may not be responsible for the creation of this language, many administrative practices reinforce its use. Administrators control faculty rewards based on this language. Faculty change their roles in response to changing rewards. Hence, there is pressure on the faculty to change their roles in response to the imagination of accountancy—efficiency, productivity, and the rest. It is unwise to ignore these aspects of work, because our institutions have limited resources. It

seems equally unwise to equate the success of the academy with the success of the academic bureaucracy.

Administrators play an important part in shaping faculty roles; however, they are not the only actors. If the faculty have wrested the power to determine their work from the administrators, as Jencks and Reisman (1968) would have us believe, then it is obvious that what faculty think about themselves is extremely important in determining faculty roles. Though faculty may be free to make choices, the choices are constrained by what the administration legitimizes through its language. Using administrators' language, therefore, constitutes a de facto acceptance of administrative control over faculty roles.

A different option would be for the faculty to invent their own work lives, consistent with the language and values of scholarship and education, broadly conceived, as opposed to accountability. Inventing this life is difficult when the language that pervades the workplace reinforces competitive, quantitative success. Competition and the resulting status gained from a win-lose model of academic success is now so deeply ingrained into faculty thinking that they may not even recognize it. Ranking based on grade level, school status, grading, getting or not getting a job, getting or not getting tenure, being published, receiving a grant, being promoted, or receiving good student evaluations is pandemic. Resisting thinking of academic work in these terms is difficult indeed.

Another difficulty with reinventing our work lives has its roots in a general faculty malaise. Academy bashing, which contributes to this malaise, is practiced both inside and outside of colleges and universities. It is reinforced through such popular books as *Profscam* (Sykes, 1988) or *The Closing of the American Mind* (Bloom, 1987). Other books, such as *Killing the Spirit* (Smith, 1990) and *The Moral Collapse of the University* (Wilshire, 1990), are less well known but echo similar themes. Articles and editorials from publications such as *Change*, *The Chronicle of Higher Education*, and *Academe* are constant reminders of questions that are being raised about appropriate faculty roles. Newspapers and news magazines often carry complaints against higher education that question exactly what roles faculty should play. Legislators provide another venue for complaints about faculty, especially in regard to the costs of higher education.

Perhaps the most stinging problem occurs within the academy under the headings "postmodernism" and "paradigm shifts." The key postmodern criticism is that "truth," the modernist glue that held the academy together, has been replaced by ideology and point of view (Sarup, 1993). Because the academy is a thoroughly modern institution, this criticism

cuts to the core. A second criticism, related to shifting paradigms, is also quite unsettling. If the fundamental disciplinary world view is called into question, the rules for "how to behave" are similarly questioned. If we are no longer certain of our ends (what truth to seek) and means (what methods to use), we no longer have the basis on which to clarify our roles. Though both criticisms make role definition problematic, the uncertainty they generate provides an opportunity for change.

Postmodernism, whatever its benefits in making us more self-critical in our thinking and more aware of hierarchies and power imbalances in the academy, has not made us more secure in our identity as faculty members. I am reminded of an aphorism of Sir William Osler, a professor of medicine at Johns Hopkins University a century ago, who was reported by my grandfather to have said about newspapers: "If you see anything in them that you know is true, begin to doubt it at once" (Bean & Bean, 1950, p. 60). Whatever we know as a fact, when we put on our post- (or post-post-) modernist hat, we begin to doubt. Uncertainty in our disciplines is reflected in protracted discussions about paradigm shifts. We bicker about abstractions—analytical issues of epistemology, theory, and methodology that may increase our credibility with each other, but the public and even colleagues in other fields are disempowered when we speak a language known only to ourselves.

To be truthful, true to ourselves, invested in student learning, invested in scholarship and creativity, I take as the basis for any legitimate role as faculty members. What next? We should not ignore efficiency and productivity, but neither should we become cogs in the grand machine. Leadership, much touted in the academy today, may be no solution. The image of administrative leadership assumes that faculty cannot lead themselves. As an archetype, it is the master-slave relationship (Denhardt, 1989).

In bureaucracies it is said a person should have only one boss. If knowledge is our boss, what is our president or dean or department chair? Helpful, I would hope. But not directive. In fact, if administrators feel some need to motivate the faculty to work in a certain way, they make the assumption that faculty do not find that work meaningful. In meaningful work, one needs no extrinsic motivation, only time and resources (Seivers, 1994).

To bemoan the problem does not solve it. There are, I believe, certain positive ideas that should be considered in defining new faculty roles. The first is from *Hamlet*, "To thine own self be true." I believe it imperative, because if one is not true to one's self, it is unlikely that one can be true to anyone else. To know one's self is not an easy task, and there is

little support for introspection. If we neglect the self, the core from which one's integrity emanates, it makes integrity hard to achieve. Despite these difficulties, a reaffirmation of being true to one's self seems desirable. Especially if a faculty member ultimately must be accountable to his or her self.

The second positive idea is that faculty should value students. Students learn more than facts from us. We are role models for students not only as professionals but as human beings. It is unlikely that any new definition of faculty work can ignore students.

The third positive idea is that faculty should do research or creative work or scholarly work for *intrinsic reasons*. One should work for the development of one's discipline, or one's self, or of knowledge and expression. To make this point may seem sophomoric, but self-promotion and institutional promotion are constant temptations. We must confront the value of extrinsic rewards used by the administration. Materialism and status should not define our roles, because they conflict with other academic values (Shils, 1984).

Avoiding certain negative ideas could also constrain our thinking about faculty roles. The first is a restatement of the last paragraph. Externally defined roles should be avoided because of their incompatibility with the academic ethos. Serving a second master (money, politics, religion, fame) keeps us from being true to ourselves, our students, or our disciplines.

When our extrinsic rewards are high, we have won the game of evaluation, but we may or may not have served our selves, our disciplines, or our students. The primary extrinsic rewards for faculty are salary and promotion. These outcomes from our work are rewarding if our value system is based on materialism and status, values that are prevalent in American culture; however, there is a dark side to these values. To endorse materialism, to teach our students this value through our example, to export this value through international students around the world, raises the specter of sustainability. The earth does not have the natural resources to provide to all inhabitants of the planet the material standard of living that exists in the United States. Whatever the virtues of materialism, it also contains a death wish for the planet.

Status as a value system fits with the notion of a meritocracy—the rule of merit. Though achieving status is not necessarily a bad thing, status systems are hierarchical and competitive. Feminists and social constructionists have challenged the validity and usefulness of such approaches. The implication of their arguments is that cooperative, relational, and participatory learning and social environments may be

preferable to competitive and hierarchical ones (Gilligan, 1982). By extension, if faculty roles are to allow for such approaches, then we must abandon a blind adherence to status attainment.

One extrinsic reward that historically attracted faculty to college and university teaching was summers off that represented the value of leisure time. In *The Overworked American* Juliet Schor (1992) documented the erosion of leisure time in our society, finding that Americans on the average are working one month more per year than they did twenty years ago. In the sixties the popular and academic presses were wondering what Americans would do with all their free time as we entered an era of thirty-hour work weeks and four-day weekends. Schor argues that it is the nature of capitalism to reduce leisure time, which fits nicely with the Puritan ethic, e.g., idleness is the Devil's work. As a result we have become a leisure-phobic society. The value of leisure, a time of reflection as opposed to action, of play and creativity as opposed to analysis, of rest instead of work, seems to have been lost. One example from the academy is the fate of sabbatical leaves, whose name comes from a time of "laying fallow"; they are now little more than time off from teaching to do research. Rest, reflection, and regeneration are disdained.

Perhaps the greatest danger to faculty members is that the definition of their roles will endorse workaholism as a virtue. Jung might have considered workaholism as the shadow of being productive. The discussion of workaholism in *The Addictive Organization* by Schaefer and Fassel (1988) is the source for many of my arguments in the following paragraphs.

First and foremost, workaholism is a pathology, not a virtue, even if it is rewarded and even if it is a norm. A person addicted to the process of work is out of control. Characteristics of addiction include denial, confusion, dishonesty, a scarcity model, the illusion of control, frozen feelings, and an ethical deterioration that leaves an addict spiritually bankrupt. Denial that there is a problem is the most important symptom, because it prevents the addict from acknowledging a need to change. A reader of the academy-bashing literature might find this language familiar in the criticism of faculty members.

Addiction relies on processes such as *the promise*, which takes a person out of the present time into the future. Academic tenure is one example of socializing faculty members to respond to a distant "promise." Another process is *external referencing*, in which one's sense of self is developed outside oneself. Faculty members often depend on external references, like the editors of refereed journals, to assess their worth as scholars. A third process is *invalidation*. Here the addict defines into nonexistence ideas that she or he doesn't like or can't control. This

process has been observed in "groupthink" situations (Janis, 1972). Invalidation, and the associated self-censorship, can often be seen in faculty meetings. Each constrains possibilities for new faculty roles. Whether we're workaholics or not, it is invalidation that makes changing roles in the academy so difficult. Hard work is to be admired; workaholism is not. "Flow," a concept described by Csikszentmihalyi (1975), is an effortless kind of work that exists between boredom and anxiety. Now anxiety seems to be winning out. For the workaholic work is not a natural part of life but a neurotic activity used to avoid feeling alive.

Three desirable things to consider in a new definition of faculty roles are to be true to ourselves, to value students, and to work for intrinsic reasons. Simultaneously, we should avoid externally defined roles, the primacy of extrinsic rewards, and workaholism. These characteristics form a baseline from which new roles might emerge.

Let me return to my thesis: we can reimagine faculty work if we use legitimate new languages to talk about our roles. It is time to move beyond the language of counting and accountability and consider describing faculty work in new languages. I should post a disclaimer here. Many people in many fields may already use these ideas in defining their work. If so, bravo.

The first language I'd like to consider is that of *play*. By this I do not mean the language of games, which are both rule based and competitive and drive us toward a win-lose mentality (Huizinga, 1949). The language of play includes such words as transformation, creativity, risk taking, suspending judgment, avoiding rigidity, testing new roles and ideas in safety, and building trust and community (Schwartzman, 1978). Rather than trivial and inconsequential, Gadamer, a hermeneutical philosopher, suggests that "our capacity for play is an expression of the highest seriousness" (Neill & Ridley, 1995, p. 75).

It is the creativity of play that may be most important in a transitional period. The importance of creativity in organizational success is perhaps the central theme of *The Tom Peter's Seminar* (Peters, 1994). Bureaucratic rules, control, accountability, and assessment create an environment where risk-taking is dangerous and creativity itself is at risk. The preconditions for play may be difficult to achieve, but failing to achieve them, the opportunity to use creativity in teaching and research is lost. If we do not teach creatively, it is unlikely our students will learn to act creatively.

The second language to be considered in reimaging faculty roles is that of *mysticism*. In mysticism, the unnameable is most important. Wonder, surprise, and the profound effects from simplicity influence

teaching and scholarship. In research, a mystic confronts the limitations of analytical systems. Good meditation is preferable to sophistry. In the classroom, students learn what it is to be human from teachers who are more than their subject matter specialties; more than the number of entries on their resumes. James P. Carse (1994) in *Breakfast at the Victory* relates a story of medical students who attend a lecture *en masse* the first day and form study groups. At the next class ten student arrive with tape recorders. Once the instructor is out of town and an assistant brings in a taped lecture, which is played for the ten tape recorders. And we wonder why our doctors sound like tape recorders, and we long for someone who cares about our health, not our pathologies.

Carse continues, talking about the mystical in teaching: "We know we have met . . . a teacher when we come away amazed not at what the teacher was thinking but at what we are thinking. . . . Those around whom surprising thinking emerges are teachers" (1994, p. 70). The human presence becomes the essence of teaching, the opposite of what distance education provides. Technology may advance the distribution of knowledge, but what of wisdom? Can a machine teach humanity and ethical responsibility to the possessors of knowledge? Mystics think not.

The third language comes from work about the *soul*, *archetypes*, and *mythology*. Thomas Moore (1992), in *Care of the Soul*, alerts us to the language of soulful caring, which is not heroic or muscular, but means attention, devotion, husbandry, adorning the body, healing, and being anxious for. The soul relates to depth, value, relatedness, heart, and personal substance. Soul here does not refer to a religious belief, nor is it related to immortality (p. 5). Robert Sardello (1992), in *Facing the World with Soul*, speaks of education as guidance of the soul into the world. He finds that materialism, which reduces the world to abstract processes, is the antithesis of the invisible—soulfulness. To be soulful means to have psychological, spiritual, relational, and emotional integrity. As Moore writes, "Care of the soul is not solving the puzzle of life; quite the opposite, it is an appreciation of the paradoxical mysteries that blend light and darkness into the grandeur of what human life and culture can be" (1992, p. xix). Descartes's gift to us was empiricism, and the shadow of that gift was loss of body and soul (see Berman, 1981).

The *archetype*, an idea borrowed from Jungian psychology, involves the world of images. Elie Humbert's book *C. G. Jung*, (1984) describes archetypes as unconscious predispositions to see the world in particular ways, which, when given cultural input, result in archetypal images (motifs, typical figures, primordial images). Examples include the shadow, sun, moon, and mandala as nonhuman archetypes, whereas mother, fool, and lover are human archetypes. Faculty can find images

of their selves in a larger context, in the soul of the world, not only as teachers, but as healers, great mothers, warriors, visionaries, tricksters, and so on. Each archetypal image offers possibilities for playing, living, scholarship, and teaching.

Mythology: Myth provides meaning to what we do, and as Joseph Campbell (1988) writes, it anchors our lives in a broader context. One function of myth is to transform consciousness, that is, to provide explanations and therefore guides for behavior. In mythology one can see how archetypal figures relate to each other and see parallels in our own universes. Myth, similar to other forms of art, invites contemplation, something sorely lacking in the frenzied lives of faculty members. Campbell, in *The Power of Myth*, wrote:

People say that what we're all seeking is a meaning for life. I don't think that's what we're really seeking. I think that what we're seeking is an experience of being alive, so that our life experiences on the purely physical plane will have resonances within our own innermost being and reality, so that we actually feel the rapture of being alive. That's what it's all finally about, and that's what these clues [myths] help us to find within ourselves. (1988, p. 5)

I take this human condition as the need to experience life emotionally, cognitively, aesthetically, spiritually, and imagistically. Faculty should attend to the quest for meaning, especially in their disciplines, but not to the exclusion of experiencing life as fully as possible.

Other languages for faculty to consider concern *passion*, *eros*, and *madness*. Connecting passion and learning is at least as old as Socrates. James Hillman writes:

Art, mission, and transference make eros manifest; so does education. For Socrates, all true teaching . . . was possible only through the daimon of eros. . . . We know that, for Socrates, love and teaching go together, that love is teaching itself, and that "there was no philosophy without friendship or love." (1972, p. 78)

Here is the language of passion, eros, attachment, love, and identification. This eros is not to be confused with the power-eros of sexual harassment, because the aim of the former is not possession or dominance. To quote from Robert Sardello in *Facing the World with Soul*:

Every true teacher knows there is a secret erotic life to teaching; and every true learner is in love with the teacher. . . . True learning makes one vulnerable to the intoxication of love; when one is in love one is learning, the two conditions cannot be separated. The love between teacher and learner is directed not toward possessing each other, but toward caring for the world. It is precisely here that teaching becomes an art, the art of enlarging love to encompass the soul of the world. (1992, p. 54)

The sentiment is shared by Paul Tillich, for whom “an authentic learning community capable of pursuing wisdom in its highest forms can only be founded upon the basis of this shared erotic passion. Thus, eros is the ‘first foundation’ of the academic and intellectual life” (Irwin, 1991). I cannot stress too strongly that I believe *we should teach and learn about the world because we love it, not because we’re afraid of it and want to control it*. When we teach criticism instead of literature, is it because we want to control interpretation? Is the purpose of science dominance over the world or understanding the world? As our academic work shifts away from experiencing the world and toward abstraction, we fail to experience the world and to share that experience with students we should love, not savage.

In a poetry class I had with Marvin Bell at the Iowa Writers Workshop thirty years ago he complained that the class would take a poem, build a structure around the poem, and talk about the structure. This approach to the study of literature pertains today, when more time is spent on literary criticism than on literature. Or when educators bicker over methodology rather than over substantive issues. Discussions of methodology empower methodologists—other academics—but not those whom the profession is supposed to serve. In trying to make ourselves more legitimate by using the most sophisticated methodology we may only be drying up, becoming more obtuse, and our ability to love either subject matter or student is diminished. In reimagining faculty work, love needs to be taken seriously, not run from in fear.

Love can be considered a kind of madness, and other forms of madness offer other opportunities for change. Raphael Sassower in an essay called “On Madness in the Academy,” would encourage us to “include the outrageousness of experimenting, committing blatant mistakes and trespassing all boundaries, deliberately upsetting norms, and challenging everything from tradition to belief, from thought to actions” (1994, p. 476) to create a world of transformed reality. He, while referencing the OED, conceives of madness as “out-of-the-ordinariness,” “passing all rational bounds in demeanor or conduct,” “extravagant in gaiety, wild,” “carried away by enthusiasm or desire, wildly excited, infatuated” (p. 475). He contrasts that with what I consider the dry rot of scholarship: “The silver platter of respectable scholarship demands incestuous relations within ongoing debates to which each participant contributes yet another footnote to a footnote” (p. 476). A role for faculty that includes madness allows for substantial change rather than just “making changes.” Most important, the frames we take for granted are made clear in the face of madness and, like a fish discovering water, the familiar

frames that constrain us can be discovered, and new frames we can grow into become new possibilities.

Another language of possibilities for changing faculty roles is that of *emotions* and includes such feelings as joy, fear, greed, grief, anger, pain, shame, guilt, happiness, empathy, caring, and so on. Bureaucracies were designed to promote rationality and eliminate irrationality (Weber, 1947), and human feelings were an early casualty. Feelings are made invisible in most organizations and studies of colleges and universities. We work in a sea of unacknowledged emotions, and any new role that reflects "logic-in-use," needs to access and acknowledge emotions. In Stephen Fineman's book, *Emotion in Organizations* (1993), there are numerous examples of how we engage in emotional labor, showing emotions we don't feel at work, while failing to acknowledge our feelings, such as love or grief, that influence our work.

That emotions exert great power in our lives—which shouldn't be news to us—was brought to national attention through a cover story in *Time Magazine* (1995). The centerpiece of the article was Daniel Goleman's book, *Emotional Intelligence* (1995) in which he emphasizes the important fact that understanding and responding appropriately to our emotions may be the best predictor of success in our lives. "Remedial emotional education" may apply to faculty as well as children. *Time* writes, "If there is a cornerstone to emotional intelligence on which most other emotional skills depend, it is a sense of self-awareness, of being smart about what we feel" (p. 63). This sentence resonates with Shakespeare's admonition — to be true to the self we must know what we feel. We must acknowledge feelings in new faculty roles. If our emotional quotient is more important than our intelligence quotient for success in our lives, then a faculty role including emotions could improve not only our own lives but the lives of our students and the values underlying our research.

Yet another language that can be used in reassessing faculty roles is the language of *art*. This language includes the ideas of beauty, harmony, balance, composition, rhythm, perspective, proportion, space, form, volume, color, movement, and so on in work. It also includes the idea of gestalt, of the emotional and rational response to work as a whole. What makes our jobs beautiful, or balanced, or rhythmic, or composed? If we are in the business of truth, and as Keats would have us believe, "truth is beauty," suddenly it may not seem so far afield to consider the aesthetic of working. We often refer to things as "more art than science," but in that sense we are often referring to more uncertainty than certainty, not that something is more full of beauty and less full of knowing.

Rumi, an 11th century mystic Sufi poet, addressed the issue of work:

Today, like every other day, we wake up empty
and frightened. Don't open the door to the study
and begin reading. Take down a musical instrument.

Let the beauty we love be what we do.
There are hundreds of ways to kneel and kiss the ground.
(Barks, 1995, p. 38)

If we are to let the beauty we love be what we do, we must incorporate beauty into our work.

The final language to consider in changing our roles is that of *community*. I grew up in an academic community hearing the university described as "a community of scholars." Karl Weick (1983), in an essay entitled "Contradictions in a Community of Scholars: The Cohesion-Accuracy Tradeoff," describes how becoming more specialized in our research (accuracy) has weakened the sense of community in higher education. If we cannot reimagine our work considering community, the chances of a meaningful transformation of our work are limited. The language of community is a language of relationships, mutual obligations, a place for making and sharing meaning, for avoiding loneliness and isolation. Real transformation takes place when it moves from the individual into the community. Community includes rights and responsibilities. If the academic community forms around the right to academic freedom, without which, it is claimed, no university could exist, what responsibilities does membership in this community entail? Here we must be true to ourselves, true to a broad conception of our work so that the full diversity of knowledge and the full range of human participants in the academic community are felt and heard, are studied, are taken to heart, are taken seriously, are not marginalized.

Obviously, other languages pertain to reimagining faculty roles. I have chosen these (play, mysticism, soul, mythology, archetype, passion, eros, madness, emotions, art, community) not as a definitive list, but because each represents a subject about which faculty members can legitimately concern themselves when thinking about their work. Although I consider these subjects legitimate, the list represents the *anima*, or feminine, and is the antithesis of most definitions of faculty roles. Because universities were designed by men, and I think it is accurate to say, for men, the other list, representing the *animus*, or masculine, bears repeating: efficiency, productivity, technology, credit hours generated, grants with overhead received, accountability, assessment, competition, costs, total quality management.

The summary of this article is presented in Table 1. Here two kinds of

TABLE 1

The Language of Accountancy Compared to Other Languages that Could Describe Faculty Work

1. ACCOUNTANCY/BUSINESS: efficiency, productivity, technology, credit hours generated, grants with overhead received, accountability, assessment, competition, costs, total quality management.
 2. PLAY: transformation, creativity, risk taking, suspending judgment, avoiding rigidity, testing new roles and ideas in safety, and building trust and community.
 3. MYSTICISM: wonder, surprise, simplicity, meditation, the meaning of being human, amazement, limitations of analytical systems.
 4. SOULFULNESS: not heroic or muscular, giving attention, devotion, and husbandry, adorning the body, healing, being anxious for; connected with depth, value, relatedness, heart, personal substance, invisible psychological, spiritual, relational, and emotional integrity.
 5. ARCHETYPAL IMAGES: mother, fool, lover, healer, great mother, warrior, visionary, trickster.
 6. MYTHOLOGY: transforming consciousness, guiding behavior, finding parallels, contemplation, experiencing the rapture of being alive.
 7. PASSION: passion, eros, attachment, love, identification.
 8. MADNESS: being outrageous, making blatant mistakes, trespassing boundaries, upsetting norms, challenging everything, creating a world of transformed reality, out-of-the-ordinary, passing all rational bounds, extravagant in gaiety, wild, carried away by enthusiasm or desire, wildly excited, infatuated, creating new frames.
 9. EMOTIONS: joy, fear, greed, grief, anger, pain, shame, guilt, happiness, empathy, caring, emotional intelligence.
 10. ART: beauty, harmony, balance, composition, rhythm, perspective, proportion, space, form, volume, color, and movement in work.
 11. COMMUNITY: relationships, mutual obligations, making and sharing meaning, avoiding loneliness and isolation, transformation, rights, responsibilities.
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languages are laid out in stark contrast. We should acknowledge the value of the productive aspects of our roles but not limit our work to this narrow perspective. The talk of accountants should not have automatic ascendancy over the other lists I have generated here. To be creative, we must not be afraid of new possibilities.

As we approach the end of the millennia, the usual *fin de siècle* reckonings may be magnified. Faculty roles are in transition. An assistant professor coming up for tenure confided in me that her publications and teaching record were fine, but she didn't have a "big grant" and might not get tenure. It may not be enough to be a scholar and teacher, one must also be an entrepreneur. If raising money is so important that a faculty member might lose her job because she had not raised enough, the opportunity to sell out (e.g., serve money as a master and not knowledge) may become a necessity for personal survival. I despair not just for her, but for the academic ethos.

Though many are not as directly affected as the assistant professor

above, faculty are criticized, faculty are uncertain, and a malaise prevails. Now is a time to care for faculty, to encourage them to use a new language to talk about future possibilities for their work. The administration is not likely to abandon the system it controls, an extrinsic model based on hierarchy, materialism, and status, for a more human and humane model based on sustainability, self knowledge, the new possibilities for work provided in the language used here. It becomes each faculty member's responsibility to recreate faculty's rôle.

It is interesting to speculate for a moment what an institution in which faculty defined their work in these languages might be like. The answer seems clear but a little daunting: utopian. A place where the lines between work and play are blurred, because each student and faculty member is fully invested in learning and discovering, creating, taking risks; where wonder and surprise are valued; where each person is connected to the depth of their being, has emotional, spiritual and relational integrity; where myth and archetype are observed and enacted in such a way as to provide depth to the experience of life and an understanding of what that life is; where scholars are passionate about their love of knowledge; where turning the world upside down is not terrifying but edifying; where the irrational is not feared and the limits of rationality are recognized; where emotions are acknowledged to be part of academic life and not repressed; where beauty and harmony and artistic expression are valued; where each member of the community makes and shares meaning and responsibilities consistent with these ideals.

Utopian societies fail, but utopian ideals can be guides, reminders of our potential. It is not realistic in this society to ignore what accountants say, else your account becomes empty. Strategies for survival are important for colleges and universities, but when survival, growth, and status become more important than the quality and character of one's work, the purpose of an institution needs to be reassessed: Are we here to keep our jobs or to do scholarly work? When one's work is more influenced by the potential to increase income than by disciplinary needs, something is amiss.

Readers with accountability on the brain might be terrified by such a place, operating according to the laws of love of learning and passion for knowledge instead of budget, rule, and order. The Soviets were long terrified of letting market forces and not centralized planning operate their economy. Many are now flourishing. There is little doubt in my mind that if such a university existed, the best faculty and the best students would flock to it. As a result, it would likely become one of the wealthiest and most productive institutions.

Any language can be constraining. If a faculty member believes he or

she *has* to behave a certain way because of the language in vogue, or if someone in an administrative role evaluates someone's work according to preset and rigid criteria, it shows that any approach can be misused. If a fundamentalist view is taken, one that is based on rigid adherence to prescribed activities, damage can be done no matter where one begins. In order to reimagine work, a faculty member must continually be open to possibilities. New languages give faculty members different ways of thinking about their work and thereby avoiding getting stuck in a non-academic free-for-all for status, money, and things.

It is time that we take responsibility for our own work, define our role broadly, and contribute to the society that supports us. Although we are not likely to escape public scrutiny, only if we are accountable to ourselves can we be accountable to the public. Only if we reimagine our work, can we serve the soul of the world.

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Racial and Marital Status Differences In Faculty Pay

Introduction

During the 1960s and early 1970s a series of affirmative action initiatives were passed in the United States to help ensure that workers would not be treated unfairly based on their personal characteristics, such as gender and race/ethnicity.¹ Since that time much attention has been directed toward determining whether workers experience differences in pay based on their gender and/or race, and if any observed differences are decreasing over time. Empirical studies have focused on both the differences in the average salaries for two groups of employees ("total wage gap") and the portion of the total wage gap that cannot be attributed to differences in average worker characteristics such as experience ("unexplained wage gap"). The fact that some of the wage gap between two groups of employees is explained by selected characteristics does not necessarily mean that this difference is justified. For example, earnings differences for faculty that are attributed to field may be inconsistent with the notion of comparable worth. Likewise, the inclusion of variables representing faculty rank have been criticized on the grounds that discrimination in promotional opportunities for differ-

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ent groups of faculty would lead to an understatement of the true unexplained wage gap.

Studies to date from the general labor market have shown that the total wage gap between men and women has declined over the past thirty years, although inequities persist.² Although the total wage gap between blacks and whites in the United States fell during the 1960s and 1970s, recent studies show that this differential has widened during the 1980s (Cain, 1986; Cotton, 1993; Haberfeld & Shenhav, 1990; O'Neill, 1990; Juhn, Murphy & Pierce, 1991; Verdugo, 1992; Levy & Murnane, 1992; Smith, 1993; Card & Krueger, 1993; and Card & Lemieux, 1994).

In the academic labor market, a notably different profile emerges with regard to differences in earnings by gender and race. Studies by Barbezat (1991) and Ransom and Megdal (1993) have shown quite convincingly that the unexplained wage gap between male and female faculty has not changed very much from the mid-1970s through the late 1980s. Though the topic of gender equity in academe has received considerable attention, relatively few empirical studies at either the institutional or national level have addressed whether there are unexplained differences in faculty pay by race/ethnicity. The few studies to date that have examined faculty pay by race have concluded that there are smaller earnings differences (in terms of both the total and unexplained wage gaps) between black and white faculty than are found in the general labor market (Gordon, Morton, & Braden, 1974; Barbezat, 1991; Riggs & Dwyer, 1995).

However, there is virtually no evidence as to how faculty in other race/ethnicity categories, such as Hispanics and Asians, have fared relative to white faculty in terms of earnings and whether their treatment further varies for men and women. Studies of racial discrimination for the broader labor force have long emphasized the importance of analyzing salary equity for workers across multiple racial/ethnic categories (Gwartney & Long, 1978; Reimers, 1983; Verdugo & Verdugo, 1984; Verdugo, 1992; Cotton, 1993). As Verdugo and Verdugo (1984) note: "The omission of other groups from such analyses is detrimental because research . . . indicates that there are important earnings differences among minority groups. . . . The failure to include other ethnic/racial groups in analyses of earnings differences results in a perpetuation of the belief that all ethnic/racial minorities are similarly disadvantaged and that all undergo the same labor market processes" (p. 417). These and other studies have shown that Hispanics and Asians have different labor market experiences from those of non-Hispanic blacks. For example, Gwartney and Long (1978) report that Asians earn more than whites and that the opposite is true for blacks and Mexican Americans.

While concerns over pay equity with regard to gender and race/ethnicity are of primary concern at most institutions, there is also a growing awareness of the possibility that male and female faculty may be treated differently based on their family characteristics, such as marital status (Ferber & Loeb, 1997). A particularly troubling result from empirical studies in the general labor market is that while there is a positive "return on marriage" for men (i.e., married men earn more than single men after controlling for relevant factors), there is no similar return on marriage for women (see Duncan & Holmud, 1983; Bartlett & Callahan, 1984; Korenman & Neumark, 1992; Blackburn & Korenman, 1994; Gray, 1995). Bellas (1992, 1993) offers evidence that as of the mid-1980s the academic labor market is similar to the general labor market in this regard.

Any conclusions regarding pay differences by marital status must at a minimum take into account how differences in the valued characteristics for married and nonmarried faculty affect earnings. The appearance of such unexplained earnings differences by marital status for male and female faculty should be of concern for higher education institutions, because it may reflect one way in which gender inequities arise in academe. The return on marital status could vary for men and women due to "supply side" and/or "demand side" forces in the labor market. For example, on the supply side, because women often bear the majority of child-rearing responsibilities in American society, married women may be more likely than married men to interrupt or reduce their time allocation to their career (Becker, 1985; Bellas, 1992) or, in the case of academic couples, accept lower wages in order to find employment at the same institution as their spouses. On the other hand, differences in the return on marriage could be driven by demand side factors, because institutions may make higher salary offers to married men than to married women on the premise that married men are typically the breadwinners of the family and thus have a greater need for higher salaries. Likewise, if female faculty are viewed as being secondary breadwinners within their households, they may receive lower salary offers if institutions feel that they would therefore be less sensitive to wages in deciding whether to accept an offer of employment. This raises the possibility that institutions may take advantage of the marital status of female job candidates and existing faculty in setting wages. The potential for such problems is even greater for academic couples.

As is true for studies of salary equity by race/ethnicity, few studies have looked at the total and unexplained wage gaps for more detailed marital status classifications, such as for separated or divorced faculty. This issue can be important when attempting to measure the return on

marriage, because the difference in salaries between married and not married faculty could vary depending on how "not married" is defined. Korenman and Neumark (1992) demonstrate that in the nonacademic labor market the unexplained wage gap between married and never married white working women is different from the unexplained wage gap between divorced or separated white working women and their never married counterparts. The only study to date to address similar differences in academe is by Bellas (1992).

If it is found that the levels of pay disparity vary across racial and marital status categories, and if these differences are further compounded by gender and/or field differences, then such results could be used by institutions to critique their affirmative action policies and identify areas in which they are more likely to be deficient and could be improved. Policies aimed at helping Hispanic faculty, for example, might be more tightly focused on Hispanic males in select fields where the largest inequities are found to persist. Institutions might also question the way in which salary offers are made for married male and female job candidates and isolate fields where this problem might be more prevalent. Such findings would help identify areas in which more detailed field-specific analyses might be conducted in the future.

This study uses the most current national data on individual faculty from the 1993 *National Study of Postsecondary Faculty (NSOPF-93)*, conducted by the National Center for Education Statistics (NCES), to estimate how the level of pay disparity varied by racial and marital status categories, and identify if they further fluctuate by gender and field. The NSOPF data are used to analyze differences in pay across five separate racial categories—Hispanic, non-Hispanic white ("white"), non-Hispanic black ("black"), Asian, and "other race"—and four current marital status categories—married, separated, cohabiting, and single (never married). What makes this study unique is that few studies at either the national or institutional level have estimated earnings differences for faculty by either race or marital status. When these differences have been examined, comparisons have typically been made between only two categories, such as black versus non-black faculty.

The key findings can be summarized as follows: First, there are considerable differences in the total and unexplained wage gaps by race/ethnicity; in addition, they vary dramatically for men and women and further by field. For example, Hispanic men earn between 4% to 6% less than white men after controlling for relevant factors, but there is no comparable differential between white and Hispanic women. These findings illustrate that, as in the general labor market, earnings differences among racial/ethnic categories of faculty are clearly not uniform. Sec-

ond, the return on marriage for men is found to be statistically significant and positive, but there is no evidence of a similar return on marriage for women.

Literature Review

Studies of faculty pay in higher education utilize data pooled across fields from either single institutions or from national surveys of faculty. Most of these studies examine whether faculty earnings differ by gender and whether progress has been made in achieving gender equity (Barbezat, 1991, and Ransom & Megdal, 1993, provide surveys). The majority of studies of salary equity have been conducted at the institutional level. Of these studies, very few address whether there are earnings differentials for faculty based on either race and/or marital status. When studies do examine pay equity by race/ethnicity, it is usually done by grouping faculty into two categories such as "black/non-black" or "white/non-white" (Koch & Chizmar, 1973; Hoffman, 1976; Riggs & Dwyer, 1995). Exceptions to this practice include studies by Gordon, Morton, and Braden (1974) and Hallock (1995), where faculty were placed into three categories: white, black, or other. Institution-specific studies usually cannot adequately address concerns about salary equity for various race/ethnicity groups because there may be too few minority faculty at a given institution to reliably estimate earnings differentials for smaller categories such as Hispanics. As an illustration of this problem, Brown and Woodbury (1993) attempted to test for unexplained earnings differences between black, Asian, Hispanic, Native American, and other faculty in their study of faculty at Michigan State University. While they found no statistical differences between the groups, the authors attributed the insignificance to the small sample sizes: "The large standard errors associated with these estimated salary gaps are largely a small sample problem—the number of ethnic minority faculty at MSU is not large, making tight point estimates difficult" (p. 12). A similar point was raised by Hirsch and Leppel (1982).

The limited empirical evidence to date suggests that the wage gap between white and black faculty is dramatically smaller than for white and black workers in the general labor market. None of the studies mentioned here that considered race found that black faculty were paid significantly less than their white (or non-black) counterparts after controlling for standard human capital measures. In fact, Gordon, Morton and Braden (1974), Hoffman (1976), and Riggs and Dwyer (1995) showed that blacks earned more than whites after controlling for experience and other factors typically controlled for in salary equations.

Even fewer institution-specific studies of salary equity focus attention on measuring the return for marriage and how it may vary for men and women. Ferber (1974) found that married women earned significantly less than single women, holding other human capital characteristics constant. One reason why few institution-specific studies examine pay differences by marital status is that because these studies often rely on payroll data kept at an institution, analysts may not have access to accurate information about the current marital status of faculty, and most payroll data files certainly would not contain data on more detailed marital status categories, such as separated and cohabitating.

National surveys of faculty can potentially address both of these issues by supplying the sample sizes needed to estimate earnings differences by more detailed racial and marital status categories and by collecting data on more current marital status classifications of faculty. National studies to date have examined faculty pay using five data sources: (1) The National Register Files (1964, 1970), (2) The Carnegie Commission Surveys of Higher Education (1968–69), (3) The American Council of Education Survey of Teaching Faculty (1972–73), (4) The Surveys of the American Professorate (1975, 1977), and (5) The Carnegie Foundation Surveys of Higher Education (1984, 1989).

As with the institution-specific studies, most analyses using national data on faculty have focused on the unexplained wage gap between men and women in higher education, and few have examined whether these unexplained wage gaps vary by race and/or marital status (Tolles & Melichar, 1968; Astin & Bayer, 1972; Johnson & Stafford, 1974; Ferber & Kordick, 1978). Among the exceptions are Barbezat (1987a, 1987b, 1989a, 1989b, 1991) and Bellas (1993), who categorize faculty into one of two racial categories: white and non-white. Their results confirm the findings from institution-specific studies; after controlling for factors such as experience, educational attainment, field, and publications, there is no evidence of an unexplained earnings differential favoring white faculty over non-white faculty. Barbezat (1991) found in the 1989 Carnegie Survey that black men earned 11% more than non-black men with similar characteristics but found no difference between black and non-black women. However, these results are unlikely to be representative of the minority faculty population, because only 38 out of 3,077 faculty in the sample (1.23%) were black.

National studies of faculty that have examined marital status differences in faculty pay include Barbezat (1987b) and Bellas (1992, 1993). While Ferber and Kordick (1978) also examined the effects of marital status on earnings, they did not report their findings due to collinearity between marital status, the number of children, and faculty mobility.

Using the 1968 and 1977 national surveys, Barbezat (1987b) found that married men and women did not earn more than their non-married counterparts after controlling for the effects of standard human capital variables. In contrast, Bellas (1992, 1993) reported evidence of a change in the returns to marriage for men. She found that married male faculty earned between 23% to 33% more than single male faculty on average. After controlling for human capital factors, the data showed that the earnings of married men still exceeded those of single men by 5% to 10%, and that this return to marriage was greater for men than for women. Bellas further provides the only study that has classified faculty into more detailed marital status categories than the simple married/not-married dichotomy. She found that the academic labor market is much like the general labor market with regard to the effect of marital status on earnings: currently married men earn more than previously married men, who in turn earn more than single men, after controlling for standard variables.

Data Description

The data in this study are taken from the 1993 National Study of Postsecondary Faculty (NSOPF-93), a nationwide survey of faculty conducted by the National Center for Education Statistics. The survey drew faculty from a population of 3,256 postsecondary public and private institutions and covered both full-time and part-time faculty. Of the 31,354 faculty surveyed, NCES received responses from 25,780 faculty for a response rate of 86.6%. Complete details of the sampling procedure can be found in the report published by the NCES (1994).

The sample used here is restricted to only full-time faculty holding the rank of either full, associate, or assistant professor in either a Research I or II, Doctoral I or II, Liberal Arts I or II, or Comprehensive I or II institution. The sample included only those faculty with length of appointments of eight months or more. A small number of respondents reported annual salaries of less than \$10,000, and were dropped from the analysis. The final sample consists of 9,819 faculty members. Table 1 provides means and standard deviations for selected variables used in the analyses to follow. Appendix A lists all of the variable definitions. As noted earlier, faculty are grouped into one of four marital status categories (married, separated or divorced, cohabiting, and single) and one of five race/ethnicity categories (Hispanic, Asian, non-Hispanic black, non-Hispanic white, and "other race"). For ease of exposition, non-Hispanic whites are referred to as "whites" and non-Hispanic blacks as "blacks."

TABLE 1

Means and Standard Deviations for Selected Variables for Faculty: Results from the NSOPF-93 Survey

Variable	Pooled Sample	Women Only	Men Only
Annual salary	\$48,604 (35,362)	\$41,821 (28,072)	\$52,214 (38,199)
Years of experience	15.76 (10.99)	12.64 (9.30)	17.42 (11.46)
Years of seniority	11.66 (9.35)	9.11 (8.11)	13.02 (9.68)
Age	48.62 (9.34)	46.77 (9.08)	49.60 (9.33)
Highest degree doctorate	0.74 (0.44)	0.67 (0.47)	0.77 (0.42)
Chairperson	0.17 (0.37)	0.16 (0.36)	0.17 (0.38)
Career journal articles	11.45 (25.19)	5.80 (14.78)	14.46 (28.81)
Career book chapters	1.46 (3.89)	1.06 (2.86)	1.68 (4.33)
Career books	0.50 (1.71)	0.36 (1.42)	0.58 (1.84)
Career textbooks	0.26 (1.02)	0.16 (0.82)	0.30 (1.11)
Married	0.75 (0.44)	0.58 (0.49)	0.83 (0.37)
Separated	0.11 (0.32)	0.18 (0.38)	0.08 (0.27)
Cohabiting	0.02 (0.14)	0.03 (0.18)	0.02 (0.12)
Hispanic	0.04 (0.21)	0.04 (0.20)	0.05 (0.21)
Asian	0.06 (0.23)	0.04 (0.19)	0.07 (0.26)
Black	0.09 (0.28)	0.11 (0.31)	0.08 (0.26)
Other race	0.02 (0.13)	0.01 (0.11)	0.02 (0.13)
Female	0.35 (0.48)	—	—
Research I or II Institution	0.22 (0.41)	0.17 (0.38)	0.24 (0.43)
Doctoral I or II Institution	0.21 (0.41)	0.20 (0.40)	0.22 (0.42)
Comprehensive I or II Institution	0.44 (0.50)	0.48 (0.50)	0.42 (0.49)
Private Institution	0.38 (0.49)	0.41 (0.49)	0.37 (0.48)
Sample size	9,819	3,410	6,409

NOTES: Standard deviations are shown in parentheses. Complete variable definitions are contained in Appendix A

Three-fourths of the respondents are married, with a higher proportion of males (83%) than females (58%) indicating that they are married. Although the majority (79%) of all respondents are white, the NSOPF-93 survey contains much better representation of faculty in non-white racial categories (blacks (9%), Asians (6%), Hispanics (4%), and "other races" (2%)) than the 1989 Carnegie Survey. In addition to information on the standard measures of human capital such as experience and educational attainment, the NSOPF-93 survey contains information on four major types of faculty publications: (1) number of articles published in refereed journals, (2) number of book chapters published, (3) number of books published, and (4) number of textbooks published. Table 2 presents mean salaries and publication rates by race and marital status.

The results show that the total wage gaps for men by race and marital status are generally much larger than the corresponding wage gaps for women. Beginning with marital status, married men on average earn approximately 21% more than single men, with smaller pay advantages for men who are either separated or cohabiting. At the same time, married women earn only about 4% more than single women on average, and separated and cohabiting women earn about 6% more than single women. Note that these total wage gaps are larger than would be observed if all nonmarried faculty were aggregated into one category. Married men and women report having more publications in refereed journals than their single peers of the same gender. It should be emphasized that the earnings and publication differences shown in this table for faculty in selected categories could be attributed to many factors such as differences in experience level and fields. For example, it is not surprising that the average salary for married faculty would exceed the average salary for single faculty, because married faculty would be expected to have more labor market experience than single faculty due to average age differences.

Turning to race/ethnicity, the data again show larger total wage gaps for men than for women across various categories. On average, Asian men enjoy a 4% pay advantage over white men, whereas the total wage gaps in favor of white men over black, Hispanic, and "other" men varied between 9% and 12%. There are much smaller total wage gaps by race/ethnicity among women. Hispanic women earned only 1% less than white women, whereas both black and Asian women earned approximately 2% more than white women on average. Finally, the mean number of publications in refereed journals for black men and women is considerably lower than for faculty in all other racial categories. At the same time, only small differences appear in the mean publication counts between white and Hispanic men and women.

TABLE 2

Differences in Earnings and Publications of Faculty by Race/Ethnicity and Marital Status: Results from the NSOPF-93 Survey

Category	Annual Salary	Career Publications				Number of Cases
		Journal Articles	Book Chapters	Books	Textbooks	
MEN AND WOMEN COMBINED						
All Cases	\$48,604	11.45	1.46	0.50	0.26	9,819
By Gender						
Men	\$52,214	14.46	1.68	0.58	0.30	6,409
Women	\$41,821	5.80	1.06	0.36	0.16	3,410
By Marital Status						
Married	\$50,168	12.95	1.58	0.52	0.28	7,327
Cohabiting	\$44,503	8.26	2.10	0.74	0.32	210
Separated	\$46,141	8.62	1.35	0.52	0.23	1,111
Single	\$41,891	5.35	0.76	0.35	0.14	1,171
By Race/Ethnicity						
Black	\$45,065	5.33	0.99	0.41	0.14	864
Hispanic	\$44,668	10.51	1.58	0.75	0.22	436
Asian	\$52,401	16.70	1.17	0.34	0.22	575
White	\$48,950	11.68	1.53	0.51	0.27	7,786
Other Race	\$47,952	17.12	1.50	0.73	0.30	158
MEN ONLY						
By Marital Status						
Married	\$53,232	15.36	1.75	0.58	0.31	5,335
Cohabiting	\$46,685	11.52	2.61	0.89	0.56	98
Separated	\$49,937	12.43	1.58	0.61	0.36	512
Single	\$44,190	6.96	0.80	0.48	0.16	464
By Race/Ethnicity						
Black	\$47,241	7.47	1.17	0.50	0.18	486
Hispanic	\$46,332	13.43	1.82	0.84	0.26	293
Asian	\$55,053	19.24	1.29	0.33	0.26	452
White	\$52,875	14.62	1.76	0.59	0.32	5,061
Other Race	\$48,040	20.82	1.65	0.68	0.26	117
WOMEN ONLY						
By Marital Status						
Married	\$41,965	6.48	1.11	0.35	0.19	1,992
Cohabiting	\$42,594	5.40	1.66	0.61	0.11	112
Separated	\$42,895	5.37	1.16	0.45	0.13	599
Single	\$40,382	4.30	0.73	0.26	0.13	707
By Race/Ethnicity						
Black	\$42,267	2.58	0.76	0.30	0.10	378
Hispanic	\$41,259	4.52	1.07	0.57	0.14	143
Asian	\$42,659	7.35	0.72	0.37	0.07	123
White	\$41,662	6.23	1.12	0.35	0.18	2,725
Other Race	\$47,699	6.56	1.07	0.85	0.41	41

Empirical Results

The following regression model is first used to estimate the unexplained wage gaps by race and marital status:

$$\text{Salary} = f(\text{human capital, characteristics, race, marital})$$

where salary = natural logarithm of annual salary, human capital = measures of faculty experience and ability, characteristics = other character-

istics of individual faculty and their institutions, race = set of four dummy variables for race/ethnicity ("white" is the omitted category), and marital = set of three dummy variables for marital status ("single" is the omitted category). The results from three alternative models, for both the pooled sample and for each gender, are presented in Table 3. The following human capital and characteristic variables are used in the first model specification (denoted "Model I"): experience and experience squared, age and age squared, educational attainment, length of appointment, gender, whether currently a chairperson, and geographical region. Model II uses the same variables that are included in Model I, plus additional controls for years of seniority and seniority squared, primary teaching field (see list in Appendix A), Carnegie classification of institution, and public versus private status of the institution. Finally, the last model ("Model III") augments Model II with 4 variables for the number of career publication counts and a variable for career patents.

Collectively, the three model specifications and variable definitions are very similar to those employed by other researchers who have examined data from national surveys of faculty. It has become standard practice for researchers (see Barbezat, 1987, 1989b, 1991) for a similar approach) to present results from several alternative model specifications, because some of the variables typically included in earnings equations, such as field, rank, and publications, are subject to criticism on the grounds that they themselves may be discriminatory (Ransom & Megdal, 1993; Bellas, 1994). By considering three alternative model specifications, it is possible to observe if the effects of race and marital status on earnings change when alternative factors are controlled for in the regression model.

The signs and significance levels of the coefficient estimates for the human capital and publication variables are consistent with those found in previous studies. As expected, pay increases along with the research intensity of the institution (as represented by the Carnegie classification) and the number of journal articles and books published over one's career. The positive sign for the variable years of experience and the negative sign for squared experience shows that there is a nonlinear relationship between the log of salaries and experience. Interestingly, male faculty in private institutions earn significantly less than men with similar measured characteristics in public institutions. Across the three model specifications, women still earn between 8% and 11% less than men, holding the other measured characteristics (including publication counts) constant. This figure is comparable to those reported by Barbezat (1989b, 1991) and Ransom and Megdal (1993) for faculty in the 1970s and 1980s, verifying that there has been little if any movement in the aggregate unexplained wage gap between male and female faculty during the past twenty years.

TABLE 3
Multiple Regression Models of Faculty Salary: Results from the NSOPF-93 Survey (dependent variable = LOG[annual salary])

Variable	Estimated Coefficients (standard errors)							
	Pooled Sample			Women Only			Men Only	
	Model I ^a	Model II ^b	Model III ^c	Model I ^a	Model II ^b	Model III ^c	Model I ^a	Model II ^b
Married	0.063** (0.010)	0.027** (0.009)	0.022* (0.009)	0.041** (0.013)	0.014 (0.012)	0.009 (0.012)	0.089** (0.016)	0.046** (0.015)
Separated	0.030* (0.013)	0.008 (0.012)	0.006 (0.012)	0.023 (0.016)	0.004 (0.015)	0.001 (0.015)	0.053* (0.021)	0.027 (0.019)
Cohabiting	0.052* (0.023)	0.033 (0.022)	0.026 (0.021)	0.063* (0.03)	0.057* (0.028)	0.048 (0.027)	0.053 (0.036)	0.017 (0.033)
Hispanic	-0.045** (0.015)	-0.026 (0.015)	-0.027 (0.014)	-0.010 (0.025)	0.008 (0.024)	0.013 (0.024)	-0.061** (0.020)	-0.043* (0.018)
Asian	0.065** (0.014)	0.014 (0.013)	0.010 (0.013)	0.025 (0.027)	0.002 (0.025)	0.004 (0.025)	0.076** (0.016)	0.015 (0.015)
Black	0.005 (0.011)	0.007 (0.011)	0.015 (0.010)	0.047** (0.016)	0.042** (0.015)	0.052** (0.015)	-0.036 (0.016)	-0.017 (0.014)
Other race	-0.041 (0.025)	-0.047* (0.023)	-0.059** (0.023)	0.005 (0.045)	0.001 (0.042)	-0.007 (0.042)	-0.058 (0.030)	-0.067* (0.028)
Female	-0.108** (0.007)	-0.095** (0.007)	-0.086** (0.007)	—	—	—	—	—
Years of experience	0.008** (0.001)	0.008** (0.001)	0.007** (0.001)	0.009** (0.001)	0.008** (0.002)	0.007** (0.002)	0.007** (0.001)	0.008** (0.001)
Experience squared/1000	-0.074** (0.015)	-0.078** (0.016)	-0.062** (0.018)	-0.078** (0.029)	-0.080* (0.036)	-0.067 (0.036)	-0.063** (0.018)	-0.076** (0.019)
Research I or II Institution	—	0.254** (0.012)	0.205** (0.012)	—	0.224** (0.019)	0.190** (0.019)	—	0.264** (0.015)
Doctoral I or II Institution	—	0.145** (0.011)	0.118** (0.011)	—	0.136** (0.018)	0.112** (0.018)	—	0.151** (0.015)
Comprehensive I or II Inst.	—	0.055** (0.010)	0.053** (0.010)	—	0.072** (0.016)	0.067** (0.016)	—	0.052** (0.014)

TABLE 3 (Continued)

Variable	Estimated Coefficients (standard errors)							
	Pooled Sample			Women Only			Men Only	
	Model I ^a	Model II ^b	Model III ^c	Model I ^a	Model II ^b	Model III ^c	Model I ^a	Model III ^c
Private institution	—	-0.021** (0.007)	-0.023** (0.007)	—	-0.013 (0.011)	-0.013 (0.011)	—	-0.023* (0.009)
Career journal articles	—	—	0.002** (0.000)	—	—	0.002** (0.000)	—	0.002** (0.000)
Career book chapters	—	—	0.005** (0.001)	—	—	0.008** (0.002)	—	0.004** (0.001)
Career books	—	—	0.008** (0.002)	—	—	0.013** (0.003)	—	0.007** (0.002)
Career textbooks	—	—	0.006* (0.003)	—	—	0.006 (0.006)	—	0.006 (0.003)
Constant	9.893** (0.080)	9.575** (0.077)	9.648** (0.075)	10.153** (0.119)	9.937** (0.116)	10.008** (0.114)	9.622** (0.107)	9.214** (0.103)
R-Squared	0.31	0.42	0.45	0.28	0.37	0.39	0.27	0.43
Sample size	9,819	9,819	9,819	3,410	3,410	3,410	6,409	6,409

NOTE: Standard errors are shown in parentheses.

^aModel I contains additional variables controlling for level of educational attainment, length of appointment (e.g., whether 8-month contract), age and age squared, whether departmental chairperson, and nine census region dummy variables.^bModel II includes all variables in Model I plus years in current position and years squared, Carnegie classification of university, and 42 variables for field.^cModel III includes all variables in the second model plus the number of career patents and four categories of career publications.* $p < 0.05$. ** $p < 0.01$ (two-tailed tests).

Turning to marital status, the results show that married men earn between 4% and 9% more than single men after controlling for selected factors, which is comparable to what Bellas (1992) found in her analysis of faculty in 1984. However, there is no similar return on marriage for women; married women earn only about 4% more than single women in Model I, and this differential is eliminated by controlling for the additional variables in Model II. Looking across the columns at the various point estimates shows that these estimated returns on marriage are larger than would be found if nonmarried faculty were all grouped together in one category. In contrast to Bellas's results, there is no unexplained wage gap between separated and single men after controlling for all of the factors in Model III. Taken together, these results are consistent with the conjecture that marital status differences by gender are due to married men receiving a salary premium. Interestingly, there is marginal evidence of a positive unexplained earnings differential in favor of cohabitating women, relative to single women.

Table 3 further illustrates how earnings differentials vary by race/ethnicity as well as by gender, and how the results are sensitive to the factors included in the earnings equation. Approximately two-thirds of the 11% total wage gap between black and white males is accounted for by variables in Model I, and most of the remaining differential can be explained after further controlling for the additional variables in Model III. The total wage gap favoring Asian males over white males is effectively eliminated after controlling for field and the other variables in Model II. In contrast, Hispanic males and males in the "other race" category fare worse in academia when compared to white males: even after controlling for all of the factors included in Model III, these men still earn between 4% and 8% less than white males.

The unexplained earnings differences for women by race are again much smaller than those for men. No statistical differences in earnings are found between white women and either Asian, Hispanic, or women in the "other race" category across model specifications. Interestingly, even though there are no statistical earnings differences between white and black men, the data illustrate that black women earn between 4% and 6% more than white women after controlling for the variables included in Model III.

Alternative Wage Gap Decompositions

Thus far, the unexplained wage gaps for racial and marital status categories have been measured by including dummy variables in the regression models for categories of interest, such as Hispanic or separated fac-

ulty. This approach has been criticized on the grounds that it restricts each of the variables in the salary model to have the same effect on earnings across categories. If these restrictions are inappropriate, then the resulting unexplained wage gaps may be misleading. An alternative to this "single-equation" approach is to estimate separate regression models for faculty in each category and then use the resulting coefficients to decompose the total wage gap into two quantities: (1) the portion that is explained by differences in the average levels of the factors in the regression model, and (2) the remainder, which is then interpreted as a measure of the unexplained wage gap (Oaxaca 1973; Blinder, 1973; Reimers, 1983; Cotton, 1988; Neumark, 1988). If the results from these "multiple-equation" methods differ considerably from the single-equation method, then the restrictions imposed by the single-equation model may have an influence on the estimated levels of pay disparity between groups.

The decomposition begins by removing the categorical variables for race and marital status from the regression model (utilizing the Model III specification) and then estimating this model separately for white, black, Hispanic, and Asian faculty. Men and women are combined for this purpose due to the relatively small number of Asian and Hispanic women in the sample. The coefficient estimates from these equations are presented in Table 4. Note that the unexplained wage gaps between men and women (as measured by the coefficient for female) vary considerably across racial categories; there appears to be an unexplained gender wage gap within race only for white and Asian faculty.

Table 5 uses these coefficient estimates to perform the Oaxaca (1973) wage decomposition and compare these results to the differentials reported earlier between white faculty and either Hispanics or blacks from the single-equation model. Details of the multiple-equation wage decomposition technique are provided in Appendix B. The first column shows the total wage gaps between whites and either blacks or Hispanics, and the second column reports the portions of the total wage gaps explained by the variables in Model III. Finally, the last column represents the difference between the first two quantities, which are the portions of the total wage gaps due to differences in the coefficients for each group (the unexplained wage gaps). To clarify how these quantities should be interpreted, consider the comparison between Hispanic and white faculty in Table 5. The first value in the row under the heading "Hispanics"—denoted Oaxaca (W)—shows that Hispanics on average earn about 5.1% less than whites. Approximately 45% of this wage gap (or -0.023) is explained by differences between Hispanic and white faculty in the average values of the independent variables used in Model III.

TABLE 4

Separate Multiple Regression Models of Faculty Salaries by Race: Results from the NSOPF-93 Survey (dependent variable = LOG[annual salary])

Variable	Estimated Coefficients (standard errors)			
	White	Black	Hispanic	Asian
Married	0.022* (0.010)	0.020 (0.026)	0.033 (0.040)	0.039 (0.046)
Separated	0.004 (0.014)	0.002 (0.032)	0.040 (0.051)	0.018 (0.078)
Cohabiting	0.045 (0.023)	-0.059 (0.079)	0.008 (0.089)	-0.021 (0.130)
Female	-0.095** (0.008)	-0.024 (0.020)	-0.018 (0.029)	-0.116** (0.037)
Years of experience	0.007** (0.001)	0.011** (0.003)	-0.001 (0.004)	-0.004 (0.005)
Experience squared/1000	-0.069** (0.017)	-0.085 (0.063)	0.086 (0.066)	0.062 (0.086)
Career journal articles	0.002** (0.000)	0.003** (0.001)	0.002** (0.001)	0.001** (0.000)
Career book chapters	0.005** (0.001)	-0.001 (0.004)	0.010** (0.004)	0.008 (0.005)
Career books	0.009** (0.002)	0.007 (0.006)	-0.002 (0.007)	0.021* (0.010)
Career textbooks	0.004 (0.003)	0.042** (0.015)	0.019 (0.017)	-0.008 (0.015)
Constant	9.523** (0.087)	9.701** (0.229)	9.984** (0.310)	9.731** (0.360)
R-squared	0.46	0.45	0.51	0.46
Sample size	7,757	864	436	575

NOTES: Standard errors are shown in parentheses. Each model contains additional variables controlling for level of educational attainment, length of appointment (e.g., whether 8-month contract), age and age squared, whether departmental chairperson, nine census region dummy variables, years in current position and years squared, Carnegie classification of university, public versus private status, 42 variables for field, number of career patents, and four categories of career publications.

* $p < 0.05$. ** $p < 0.01$ (two-tailed tests).

The remainder, -0.028, is the unexplained wage gap between Hispanic and white faculty.

The decompositions of the total wage gaps indicate that there are no substantial differences in the estimated level of pay disparity between white and black faculty or between white and Hispanic faculty when the single-equation method is replaced by the multiple-equation Oaxaca procedures. Beginning with blacks, in each instance the 4% wage disadvantage for blacks relative to whites (-0.044) becomes a 1% to 2% unexplained wage differential in favor of blacks after controlling for differences between black and white faculty in the variables included in Model III. On the other hand, over half of the wage disadvantage faced by Hispanics relative to whites (-0.051) remains after controlling for these same factors, regardless of whether a single-equation or multiple-

TABLE 5
Wage Gap Decompositions for Black and Hispanic Faculty: Results from the NSOPF-93 Survey

Category/Method	Total Wage Gap ^a	Explained Wage Gap ^b	Unexplained Wage Gap ^c
<i>Blacks</i>			
Oaxaca(W) ^d	-0.044	-0.061 (+139%)	+0.017 (-39%)
Oaxaca(B) ^e	-0.044	-0.064 (+145%)	+0.020 (-45%)
Single-equation	-0.044	-0.059 (+134%)	+0.015 (-34%)
<i>Hispanics</i>			
Oaxaca(W) ^d	-0.051	-0.023 (+45%)	-0.028 (+55%)
Oaxaca(H) ^f	-0.051	-0.019 (+37%)	-0.032 (+63%)
Single-equation	-0.051	-0.014 (+27)	-0.037 (+73%)

NOTE: All wage decompositions are based on the pooled sample for men and women using Model III presented in Table 3.

^aThe total wage-gap is calculated as the mean log of salary for faculty in the designated racial category (blacks or Hispanics) minus the mean log of salary for white faculty.

^bThe explained wage gap represents the portion of the wage gap that is due to differences between minority and white faculty in their measurable characteristics.

^cThe unexplained wage gap is the wage gap (column 1) minus the explained wage gap (column 2).

^dOaxaca(W) = the coefficients from the white-only regression model are used as the no-discrimination wage structure.

^eOaxaca(B) = the coefficients from the black-only regression model are used as the no-discrimination wage structure.

^fOaxaca(H) = the coefficients from the Hispanic-only regression model are used as the no-discrimination wage structure. Values in parentheses represent the percentages of the total wage gap that are either explained or not explained by differences in faculty characteristics.

equation method is used to measure pay disparity. Therefore, the conclusions reached in the previous section with regard to the magnitude of the unexplained wage gaps by race are not greatly affected by the restrictions imposed by the single-equation method.

Table 6 summarizes the results from Tables 2 and 3 to show how the total and unexplained wage gaps vary for faculty by race, marital status, and gender. By and large, both the total and unexplained wage gaps by race and marital status are smaller for women than for men. Despite the continuing existence of a raw pay differential between black and white men, there is no evidence in the data that there are unexplained wage differentials favoring white faculty over black faculty after controlling for factors such as experience, educational attainment, field, and publications. On the other hand, Hispanic men clearly fare worse than white men in higher education. Finally, although 80% of the large wage gap between married and single men is explained by human capital factors, a significant return to marriage persists for men but not for women.

TABLE 6

Summary of Estimates of the Total and Unexplained Wage Gaps for Faculty by Marital Status and Race/Ethnicity: Results from the NSOPF-93 Survey

Category	Total Wage Gap ^a		Unexplained Wage Gap ^b	
	Men	Women	Men	Women
<i>Race/Ethnicity^c</i>				
Black	-11%	+2%	-1%	+5%**
Hispanic	-12%	-1%	-5%**	+1%
Asian	+4%	+2%	+1%	0%
Other Race	-9%	+15%	-8%**	-1%
<i>Marital Status^d</i>				
Married	+21%	+4%	+4%**	+1%
Separated or Divorced	+6%	+6%	+2%	0%
Cohabiting	+13%	+6%	+1%	+5%

^aPercentage difference in mean salaries between two groups.

^bWage differential after controlling for variables used in Model III shown in Table 3.

^cTotal wage gaps compare minority faculty average salaries to average salaries for non-Hispanic white faculty.

^dTotal wage gaps compare average salaries by marital status to single (never married, not cohabitating) faculty.

***p* < 0.01.

Race and Marital Status Differences by Field

The salary models presented thus far aggregate faculty across many different disciplines. While the regression models include a series of 42 dummy variables to control for differences in salaries based on primary teaching fields, by construction the effects of race, marital status, and the other independent variables in the model on earnings are assumed to be the same across all fields in the sample. However, it is quite possible that the unexplained wage gaps for selected categories of faculty vary by field. The market for faculty in selected race/ethnicity categories will depend on both the supply of minority faculty in each field from which to choose and the demand for minority faculty. These conditions can obviously vary by field and may have important implications for how minority faculty appear to be treated when the data are aggregated across fields.

With regard to gender, Bellas (1997) argues that women tend to be more highly represented in low-paying fields and that this would have an impact on their estimated unexplained wage gap (also see Bergmann, 1985, and Bellas, 1994). Likewise, there may be differences across disciplines with regard to how men and women are treated based on their family characteristics. Information on how these unexplained wage differences vary across fields would be useful to administrators in formu-

lating appropriate affirmative action policies. For example, institutions might be able to identify particular disciplines that are more likely than others to provide inequitable treatment to faculty in select categories. At the same time, administrators could gain a better understanding of why the total wage gaps between faculty in these categories vary across fields and devise more equitable formulas for correcting inequities when they are found to exist.

To examine this issue, the sample is divided into five major categories of fields: (1) social sciences, (2) arts and humanities, (3) physical sciences and mathematics, (4) professional fields, and (5) all other fields. Model III is then estimated separately for men and women for each subsample. Table 7 contains the estimated coefficients for each of the four race/ethnicity variables in the model.

Because the standard errors of the estimated coefficients increase as the sample size decreases, it becomes more difficult to find evidence of statistically significant effects for the independent variables in the disaggregated models shown here. Nonetheless, the results in Table 7 show that there are some interesting variations in the effects of race on earnings by field. First, the unexplained wage gap in favor of black females is much smaller in both the physical sciences and professional fields than in the social sciences. Second, although Asian males fare worse than white males in the social sciences, the opposite is true in the professional fields. Third, while the data pooled across fields show that Hispanic males earn significantly less than their white counterparts, this negative differential appears to be concentrated among faculty in the arts and humanities and, to a lesser extent, the professional fields. Finally, the large unexplained wage gap between white males and males in the "other race" category is relatively small in the social sciences and largest in the physical sciences. Interestingly, female faculty in the "other race" category earn significantly more than white females in the miscellaneous field category. As with gender, these differences could be influenced by factors such as the racial composition of faculty in selected fields.

Table 8 reports the estimated coefficients for the three marital status variables from each of the subsamples. Table 8 shows that as with race, there are also some notable differences in the effects of marital status on earnings across groupings of fields. For example, the largest differences in the returns on marriage for men and women are found in the social and physical sciences. The point estimates for the effects of cohabitating on earnings vary considerably across fields, although it is significant only for women in the social sciences. Finally, women who are separated or divorced earn a positive premium in the physical sciences,

TABLE 7

Estimated Coefficients for Racial Classifications from Stratified Models

Sample	Black	Asian	Hispanic	Other Race	Sample Size
<i>Social Sciences^a</i>					
Males only	+0.008 (<i>t</i> = 0.39)	-0.079* (<i>t</i> = 2.44)	-0.038 (<i>t</i> = 1.24)	-0.029 (<i>t</i> = 0.66)	2,071
Females only	+0.066** (<i>t</i> = 3.59)	+0.045 (<i>t</i> = 1.10)	+0.026 (<i>t</i> = 0.77)	-0.106 (<i>t</i> = 1.69)	1,178
<i>Arts & Humanities^b</i>					
Males only	+0.026 (<i>t</i> = 0.71)	-0.008 (<i>t</i> = 0.11)	-0.076* (<i>t</i> = 2.30)	-0.081 (<i>t</i> = 1.06)	684
Females only	+0.091 (<i>t</i> = 1.85)	-0.002 (<i>t</i> = 0.04)	+0.042 (<i>t</i> = 0.96)	+0.021 (<i>t</i> = 0.22)	523
<i>Physical Sciences/Math^c</i>					
Males only	-0.023 (<i>t</i> = 0.86)	-0.012 (<i>t</i> = 0.66)	-0.031 (<i>t</i> = 1.06)	-0.116** (<i>t</i> = 2.87)	1,991
Females only	+0.018 (<i>t</i> = 0.35)	-0.036 (<i>t</i> = 0.74)	+0.005 (<i>t</i> = 0.07)	-0.147 (<i>t</i> = 1.06)	431
<i>Professional Fields^d</i>					
Males only	-0.097 (<i>t</i> = 1.79)	+0.123** (<i>t</i> = 2.65)	-0.115 (<i>t</i> = 1.43)	-0.057 (<i>t</i> = 0.50)	940
Females only	-0.010 (<i>t</i> = 0.27)	-0.002 (<i>t</i> = 0.03)	+0.030 (<i>t</i> = 0.44)	-0.166 (<i>t</i> = 1.66)	793
<i>Other Fields^e</i>					
Males only	+0.002 (<i>t</i> = 0.04)	-0.027 (<i>t</i> = 0.47)	+0.001 (<i>t</i> = 0.01)	-0.096 (<i>t</i> = 1.15)	723
Females only	+0.060 (<i>t</i> = 1.47)	-0.016 (<i>t</i> = 0.23)	-0.146 (<i>t</i> = 1.68)	+0.411** (<i>t</i> = 3.96)	485
<i>All Fields</i>					
Males only	-0.011 (<i>t</i> = 0.79)	+0.009 (<i>t</i> = 0.60)	-0.048** (<i>t</i> = 2.67)	-0.080** (<i>t</i> = 2.96)	6,409
Females only	+0.052** (<i>t</i> = 3.47)	+0.004 (<i>t</i> = 0.16)	+0.013 (<i>t</i> = 0.54)	-0.007 (<i>t</i> = 0.17)	3,410

NOTE: Each equation uses the Model III specification shown in Table 3. Calculated *t*-statistics (in absolute values) shown in parentheses below each estimated coefficient.

^aIncludes religion, psychology, public affairs, anthropology, archaeology, ethnic studies, economics, geography, history, international relations, political science, sociology, communications, education, and other general social sciences.

^bIncludes languages, home economics, industrial arts, library science, and art.

^cIncludes agriculture, biological sciences, physical sciences, mathematics, architecture, science technologies, computer science, and engineering.

^dIncludes health sciences, business, and law.

^eIncludes military studies, interdisciplinary studies, parks/recreation, protective services, vocational training, consumer services, mechanics, precision production, transportation, and miscellaneous fields.

p* < 0.05. *p* < 0.01.

TABLE 8

Estimated Coefficients for Marital Status Classifications from Stratified Models

Sample	Married	Cohabiting	Separated/Divorced	Sample Size
<i>Social Sciences^a</i>				
Males only	+0.049* (<i>t</i> = 2.20)	-0.028 (<i>t</i> = 0.60)	+0.035 (<i>t</i> = 1.21)	2,071
Females only	+0.023 (<i>t</i> = 1.43)	+0.093** (<i>t</i> = 2.62)	+0.020 (<i>t</i> = 0.97)	1,178
<i>Arts & Humanities^b</i>				
Males only	-0.001 (<i>t</i> = 0.03)	+0.089 (<i>t</i> = 1.18)	-0.031 (<i>t</i> = 0.71)	684
Females only	-0.030 (<i>t</i> = 0.99)	-0.053 (<i>t</i> = 0.78)	-0.059 (<i>t</i> = 1.56)	523
<i>Physical Sciences/Math^c</i>				
Males only	+0.066* (<i>t</i> = 2.50)	+0.068 (<i>t</i> = 1.04)	+0.058 (<i>t</i> = 1.64)	1,991
Females only	+0.049 (<i>t</i> = 1.43)	+0.102 (<i>t</i> = 1.30)	+0.140** (<i>t</i> = 2.89)	431
<i>Professional Fields^d</i>				
Males only	+0.029 (<i>t</i> = 0.52)	-0.084 (<i>t</i> = 0.58)	-0.056 (<i>t</i> = 0.70)	940
Females only	+0.040 (<i>t</i> = 1.24)	+0.051 (<i>t</i> = 0.62)	-0.010 (<i>t</i> = 0.24)	793
<i>Other Fields^e</i>				
Males only	+0.011 (<i>t</i> = 0.30)	+0.067 (<i>t</i> = 0.82)	+0.024 (<i>t</i> = 0.50)	723
Females only	-0.040 (<i>t</i> = 1.35)	-0.055 (<i>t</i> = 0.85)	-0.077* (<i>t</i> = 1.96)	485
<i>All Fields</i>				
Males only	+0.039** (<i>t</i> = 2.79)	+0.010 (<i>t</i> = 0.31)	+0.023 (<i>t</i> = 1.21)	6,409
Females only	+0.009 (<i>t</i> = 0.75)	+0.048 (<i>t</i> = 1.78)	+0.001 (<i>t</i> = 0.07)	3,410

NOTES: Each equation uses the Model III specification in Table 3. Calculated *t*-statistics (in absolute values) shown in parentheses below each estimated coefficient.

^aIncludes religion, psychology, public affairs, anthropology, archaeology, ethnic studies, economics, geography, history, international relations, political science, sociology, communications, education, and other general social sciences.

^bIncludes languages, home economics, industrial arts, library science, and art.

^cIncludes agriculture, biological sciences, physical sciences, mathematics, architecture, science technologies, computer science, and engineering.

^dIncludes health sciences, business, and law.

^eIncludes military studies, interdisciplinary studies, parks/recreation, protective services, vocational training, consumer services, mechanics, precision production, transportation, and miscellaneous fields.

p* < 0.05. *p* < 0.01.

whereas the same attribute results in a negative unexplained wage gap within the miscellaneous fields category.

Summary and Discussion

This study focuses on how the pay status of faculty varies according to several different race/ethnicity and marital status categories as defined in the NSOPF-93 survey. This large national sample permits a more detailed analysis than before of earnings differentials across smaller racial/ethnic groups and provides more current information on detailed marital status categories than would be possible using most data from institutional personnel data bases.

Although previous studies aggregate faculty across fields into one of two racial and/or marital status categories, this study reveals that there are remarkable differences in pay equity across race/ethnicity categories and differentials in the return on marital status for men and women. With regard to marital status, while there is a positive aggregate salary return on marriage for men after controlling for factors such as experience, educational attainment, field, and quantity of publications, there is no similar salary premium for married women. This difference could reflect factors such as labor supply decisions for married male and female faculty due to their traditionally different childbearing and household responsibilities and/or demand-side differences in the salaries offered to married men and women. Unfortunately, the results in this type of study cannot be used to distinguish between these two explanations. Nonetheless, they clearly show that there is some difference in how men and women in academe are compensated for their marital status, which should be cause for some concern. Because the marriage parameter estimates for men are similar to those found by Bellas in a 1984 national survey, there is no evidence that the excess return to marriage for men has diminished over the past ten years. As women continue to enter the ranks of the professorate in greater numbers, the treatment of academic couples promises to become an even more important policy issue in coming years (see Ferber & Loeb, 1997).

Salary inequities for faculty are also found to vary considerably for men and women by race/ethnicity. The experiences of Hispanic and "other race" men relative to their white counterparts are dramatically different than those for women in the same categories, with the negative earnings difference between Hispanic and white men being largest in the arts and humanities and professional fields. Likewise, white women are actually at a disadvantage compared to black women after taking into account human capital characteristics, with this difference being the

greatest in the social sciences and arts and humanities. Interestingly, no such differentials exist for men in the aggregate, although there is marginal evidence that black men in the professional fields are at a disadvantage in comparison to white men. While the average pay of Asian faculty exceeds that for whites, this differential is fully explained by the factors in the third model. By contrast, Hispanic men in the aggregate receive salaries that are 4% to 6% lower than white men after controlling for field and human capital measures. If the falling gap in pay between blacks and whites is attributable to the success of Affirmative Action policies, it is an open question as to why women and Hispanics have not benefitted to the same extent, and why considerable variations appear by field for men and women.

Overall, the data show that the experiences of faculty by race and marital status differ from those of workers in the general labor market. In particular, blacks appear to have reached earnings parity with whites in higher education. Clearly, blacks are doing far better in faculty positions in higher education than in the labor market in general. Given the commitment to Affirmative Action by universities and colleges, the results might be interpreted by some as evidence that these policies seem to be working. Others might counter that the evidence supports the opposite conclusion, because black females earn somewhat more than white females after controlling for field and number of publications, and that salary deficiencies persist for faculty in other race/ethnicity categories. It should be remembered at this point that this study focuses on those individuals who have attained employment within academe and thus cannot address other Affirmative Action concerns, such as possible inequities with regard to access to faculty positions.

Although the results presented here cannot be used to isolate a cause for why faculty in different race/ethnicity categories are treated differently and why this treatment varies so much by gender and field, this study clearly shows that uniform policies have not been effective in ensuring equal treatment for all groups of faculty. Equity cannot be viewed as a simple "white/non-white" or "male/female" issue; rather, it must be viewed as a more complex process integrating race, field, gender, and family status differences. Although national studies of faculty cannot further explain these differences, they can suggest areas for future study. In particular, these results could help shape more detailed field-specific studies to learn about the profiles of faculty in selected categories and how they are compensated. At a minimum, such studies should examine additional measures of faculty productivity before a more definitive conclusion can be drawn as to the causes for such differentials.

APPENDIX A

Variable Definitions

The following is a description of the variables used in this study. The raw data are contained in an SPSS system file named 'FAC93.SAV' which is available from NCES.

Variable Name	Definition and Method of Construction
<i>Experience Variables</i>	
Years in current position:	Current year (93) minus year began current position.
Years of experience:	Sum of years of total labor market experience from three most recent positions, including current position. When respondent worked part-time at previous positions, the years of experience for these positions were given a weight of 0.50.
Age:	Current year (93) minus year of birth. For those respondents with missing years of birth (but reported age in categories), age was calculated using the midpoint of the age class.
<i>University Characteristics (omitted category = "Liberal Arts I or II Institution")</i>	
Research I or II institution:	1 if current institution is listed as a Research I or II institution according to the Carnegie classification system.
Doctoral I or II institution:	1 if current institution is listed as a Doctoral I or II institution according to the Carnegie classification system.
Comprehensive I or II institution:	1 if current institution is listed as a Comprehensive I or II institution according to the Carnegie classification system.
Private:	1 if private institution.
<i>Publication Measures</i>	
Career articles published in refereed journals:	Defined as the number of journal articles published.
Career book chapters published:	Defined as the number of book chapters published.
Career textbooks published:	Defined as the number of textbooks published.
Career books published:	Defined as the number of books published.
<i>Geographical Location Variables (omitted region = "Other")</i>	
Region0–Region9:	Ten regional dummy variables (BEA regional codes). Includes New England, Mid East, Great Lakes, Plains, Southeast, Southwest, Rocky Mountain, Far West, Outlying Areas, and other.
<i>Field Variables (omitted field = "Other")</i>	
Dept1–Dept43:	Forty-three dummy variables for principal field of teaching. Includes agriculture, architecture, arts, business, communications, computer science, education, engineering, English, foreign languages, health sciences, home economics, industrial arts, law, library/archival, biological sciences, physical sciences, mathematics, military studies, in-

APPENDIX A (Continued)

Variable Name	Definition and Method of Construction
	terdisciplinary studies, parks/recreation, theology, protective services, psychology, public affairs, science technologies, social science/general, anthropology, archeology, ethnic studies, demography, economics, geography, history, international relations, political science, sociology, construction trades, consumer services, mechanics, precision production, transportation, and other.
<i>Personal Characteristics, Other Variables</i>	
Month8–Month12:	Dummy variables for the number of months of appointment. Monthxx = 1 if the number of months appointment = xx, 0 otherwise. Omitted appointment variable = month9.
Chairperson:	1 if faculty member is the chairperson of the department, 0 otherwise.
Female:	1 if female, 0 otherwise.
Career patents:	Defined as the number of patents.
<i>Marital Status (omitted category is "single")</i>	
Married:	1 if currently married.
Separated:	1 if currently separated, divorced, widowed, or not applicable.
Cohabiting:	1 if currently living with someone.
<i>Highest degree (omitted category is "other degree")</i>	
Doctdeg:	1 if highest degree is doctorate.
Profdeg:	1 if highest degree is professional degree.
Masters:	1 if highest degree is master's.
<i>Race (omitted category is "non-Hispanic whites")</i>	
Black:	1 if race is non-Hispanic black.
Hispanic:	1 if race is Spanish/Hispanic. Includes faculty of the following origins: Mexican/Chicano, Cuban/Cubano, Puerto Rican/Boricuan, and others.
Asian:	1 if race is Asian. Includes faculty of the following origins: Chinese, Filipino, Japanese, Korean, Southeast Asian, Pacific Islanders, and others.
Other race:	1 if race is none of the above, and not non-Hispanic white.

APPENDIX B

The Multiple-Equation Wage Decomposition Technique

Using the formula described by Neumark (1988), the total wage gap between white and minority faculty (denoted by subscripts m and w, respectively) can be decomposed into two aggregate components:

$$\bar{y}_w - \bar{y}_m = \sum_{j=0}^J b_{nj} (\bar{x}_{wj} - \bar{x}_{mj}) + \sum_{j=0}^J [\bar{x}_{wj} (b_{wj} - b_{nj}) - \bar{x}_{mj} (b_{mj} - b_{nj})]$$

where $(\bar{y}_w - \bar{y}_m)$ = total wage gap, J = number of independent variables in the salary model ($j = 0$ denotes the intercept), $\bar{x}_{ij}$ = mean of the j -th independent variable for faculty in the i -th category, b_{wj} = estimated coefficient for the j -th independent variable for white faculty, b_{mj} = estimated coefficient for the j -th independent variable for minority faculty, and b_{nj} = estimated coefficient for the j -th independent variable for faculty in the absence of discrimination. The collective set of coefficients $\mathbf{b}_w = (b_{w0}, \dots, b_{wJ})$ is referred to as the white wage structure; likewise $\mathbf{b}_m$ = minority wage structure and $\mathbf{b}_n$ = no-discrimination wage structure.

The total wage gap is simply the difference in mean (log) salaries for white and minority faculty. The explained wage gap measures the portion of the total wage gap that is attributable to differences in the average values of the J independent variables in the regression model, and is represented by the quantity following the first summation sign above. Finally, the unexplained wage gap measures the portion of the total wage gap that is not attributed to differences in the average values of the J independent variables in the model, and is denoted by the quantity following the second summation sign.

To calculate the explained and unexplained wage gap, values are needed for the respective wage structures ($\mathbf{b}_w$, $\mathbf{b}_m$, $\mathbf{b}_n$) and the average values of the independent variables in the model. The alternative multiple-equation methods use the same general decomposition method as shown above, but differ in their choice of wage structures. Both the Oaxaca (1973) and Neumark (1988) methods would estimate the regression model separately for white and minority faculty and use the coefficient estimates as the white and minority wage structures, respectively. The two procedures, however, differ in their choice of the no-discrimination wage structure. The Oaxaca (1973) method uses either the white or the minority wage structure as the no-discrimination wage structure (i.e., $\mathbf{b}_n = \mathbf{b}_w$ or $\mathbf{b}_n = \mathbf{b}_m$), whereas under Neumark's (1988) approach, the no-discrimination wage structure is obtained by estimating the salary model over the combined set of white and minority faculty. Alternative choices for the no-discrimination wage structure have also been offered by Reimers (1983) and Cotton (1988).

Notes

¹ Legislation passed in the United States during this time period included the Equal Pay Act (1963), Title VII of the Civil Rights Act (1964), and Title VII amendments to the Equal Employment Opportunity Act (1972).

² For example, Goldin and Polachek (1987) estimate that the wage gap between men and women in 1985 was 35%, with roughly half of this differential being explained by human capital characteristics. They report that the wage gap between men and women fell during the 1950s and 1980s, with little progress in the 1960s and 1970s. Other studies of trends in male-female earnings differences include O'Neill (1985), Blau and Beller (1988), Wellington (1993) and Blau and Kahn (1994). Blackburn and Korenman

(1994) and Gray (1995) present evidence of a decline in the unexplained wage gap between married and not married men.

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Gender-Based Differences in Perception of Experiences in Higher Education

Gaining a Broader Perspective

The question of the adequacy of educational experiences for women is again coming to the fore in policy discussions in America. In the last few years the mass media have reported on the ongoing debates regarding potential trends in public schools to offer individual courses, academic support programs, and even whole facilities segregated by student gender. The *Chronicle of Higher Education* periodically reports on more programs added at the college level targeted specifically to the needs of women. Proponents of such efforts frequently cite research conducted in primary- and secondary-level public schools which indicates that younger female students particularly may benefit developmentally from separate but equal learning environments. The research regarding the benefits from such programs at the postsecondary level is less clear in making a case regarding the need for these approaches.

Hall and Sandler (1982) were leaders in the solution-oriented investigation of women's perceptions of academic experiences in postsecondary education. In their original research for the report *The Classroom Climate: A Chilly One for Women?* Sandler, Silverberg, and Hall found "some 30 ways in which faculty members often treated women students differently in the classroom" (Sandler, Silverberg, & Hall, 1996, p. 1).

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This differential treatment, combined with certain male class member behaviors, contributed to what they called the "chilly climate" in the college classroom. As a consequence of such a climate, women described feeling unable to participate fully in the learning process. Clearly, the authors argued, the result could have a debilitating impact on the development of women. In the most recent report, *The Chilly Climate: A Guide to Improve the Education of Women* (Sandler et al., 1996), Sandler, Silverberg, & Hall maintain that the college environment is still frequently inhospitable to women. A quote Sandler, et al. cite from Kramarae & Treichler for use in their introduction illustrates both their position and motivation: "Our work is prompted by continuing reports from female university students suggesting not only that their classroom experiences are different from males' but also that their experiences are often unsatisfactory in ways that are not recognized by most university teachers and critics of educational policy" (Kramarae & Treichler, 1990, p. 41, as cited in Sandler, et al., 1996, p. 1).

However, Sandler et al. acknowledge that some of the research conducted as a response to their original report does not support their position. Studies that do, to some extent, support the chilly classroom climate in higher education proposition include those by Brooks (1982), Follet, Andberg, and Hendel (1982), Hite (1985), Rosenfeld and Jarrard (1985), and Rienzi, Allen, Sarmiento, and McMillin (1993).

Brooks's (1982) observational study of college student behaviors found that males disproportionately dominated classroom discussions in female professor's courses, exhibiting greater than expected speech frequency and longer speech duration. Males in this study also accounted for twice the expected proportion of interruptions of others in class. However, in the classrooms run by male professors, no differences in speech duration or frequency were found between male and female students.

Follet, et al. (1982) found gender-based differences in perceptions of sex discrimination. More women (50%) than men (30%) perceived that sex discrimination existed in the college, primarily to the disadvantage of women. However, only 10% of the total respondents felt occasionally or frequently offended by behaviors that included sexist remarks, inappropriate humor, and so on. Further, there were no differences in how male and female students felt treated by professors when they solicited career advice or participated in class.

Hite (1985) found gender-based differences in perceptions of doctoral students regarding support from faculty. Even though women students in the study felt greater role incongruence than male students, they thought they received less support from faculty. Hite proposed that this lack of support might contribute to premature program termination for women.

In a study designed to consider the effects of perceived sexism by professors on students' descriptions of the classroom climate, Rosenfeld and Jarrard (1985) found that "both male and female students perceived professors of liked classes as less sexist than those of disliked classes, and female professors as less sexist than male professors" (p. 211). Affect toward a course was also associated with feelings of supportiveness and involvement. These variables appeared to be moderated by perceptions of sexism for courses taught by male professors. Ultimately, female students reported disliking their classes more than male students.

Rienzi et al. (1993) found that the majority of alumni perceived their university environment as gender-neutral, although women slightly less so than men. Ten percent of women alumni, versus 2% of male alumni, reported negative treatment on the basis of their gender while at the university from at least one source (faculty in their major, other faculty, students, or administrators/staff). Interestingly, women also reported more favorable treatment (11%) than male students (7%).

Other studies directly contradict the notion of a chilly classroom climate for women. For example, Boersma, Gay, Jones, Morrison, and Remick (1981) found in their well-constructed study, which included observational as well as perceptual data, that "students reported no difference in the behavior of male and female teachers. Observations, enrollment, and attendance data all consistently suggest there is no apparent difference in a teacher's behavior based on student's sex" (p. 782).

Heller, Puff, and Mills (1985) found no differences in faculty behaviors toward men and women in their classrooms. Further, they found no gender-based differences in measures of student confidence in their preparation for further education or careers. In fact, they found some evidence to suggest that women are treated as if they were more capable than men.

Other studies (Constantinople, Cornelius, & Gray, 1988; Cornelius, Gray, & Constantinople, 1990) found that division of the curriculum, class size, and time of the semester were more influential on class participation rates than student or instructor gender. They found no evidence supporting the argument that faculty members behave in ways that discriminate against female students. Some differences in participation rates that were observed between the sexes were suggested to be a result of students bringing different predispositions toward participating into the classroom as opposed to differences being caused by faculty behaviors (Cornelius, et al., 1990).

Other research efforts indicate that although both women and men perceived inequities due to their gender in their college environment, most students reported a campus environment that was neither support-

ive nor discouraging (Cranston, 1989). Although their perceptions differ in the details, there were no significant overall differences between men and women student responses on the Campus Environment Survey total scale. In this study, women students reported assisting a professor in class, being employed by a professor, and verbally disagreeing with a professor in class more than male students.

Finally, Fassinger's (1995) research indicates that professors' interpersonal styles are not directly related to the higher student class participation rate she found for males, but rather that the way professors design their courses and the traits students bring to the classroom are the key influencing factors. Fassinger concludes that creating a positive emotional climate (e.g., through the use of study groups and learning partners), rewarding participation, and encouraging student-to-student interactions are all strategies within the professoriate's control that have a positive association with participation rates for both sexes, and especially so for women.

Concerns have been expressed regarding the qualitative, anecdotal nature of the original Chilly Climate study (Heller, et al., 1985). Sandler et al. (1996) respond to these concerns with the observation that Heller et al.'s research suffers from methodological flaws as well (p. 96, 18n), and that anecdotal evidence is a rich source of information on the topic.

We share Heller et al.'s concerns regarding the anecdotal nature of Sandler et al.'s approach. Other, more structured, studies in this area are very limited in scope or fail to assess the impact of any differences in experiences between the sexes that are found. This may be especially problematic as public policy and temperament begin to soften regarding using gender-segregated learning environments as a viable educational approach.

The possibility exists that many pre-1980s classrooms were somewhat inhospitable for women due to the conscious and often unconscious actions of a male-dominated professoriate. Is the college classroom climate, and for that matter, the campus climate in general, still a chilly one for women? Is the education of women suffering as a result? The purpose of this study is to provide a broader perspective on the question by introducing the results of an analysis of College Student Experience Questionnaire (CSEQ, 3rd ed.) data collected in 1994 from a large sample ($n = 15,960$) of college students. If a problem exists in the higher education setting for women and faculty behaviors are a part of it, then we would expect to find lower average ratings for women on each item within the CSEQ's "Experiences with Faculty" scale, and a lower response for the "participated in class discussions" item within the "Course Learning" scale. The CSEQ also has three separate items that

ask the student to assess their relationships with other students, faculty, and administrative personnel. Responses to these questions were analyzed to detect any differences between the sexes. Finally, responses to the "Estimate of Gains" items, and responses to two questions designed to gauge overall student opinions about their college choice were analyzed. We agree with Sandler et al. that "participation [in class] is essential to learning; students who actively participate learn more and are more satisfied with the learning process" (pp. 1-2). Assumedly, if female students' perceptions of their college climate were generally negative, and consequently their ability to participate in the learning process was adversely impacted, then their opinions regarding how much they gained from college and of the institution they selected would be lower than those of male students.

Method

The data used in this study were collected in 1994 by various higher education institutions for the purposes of institutional assessment. The 1994 data set was used because it was the largest one available at the time. The data have been provided to the authors by the Center for Post-secondary Planning and Research, School of Education, Indiana University, and are used with permission for the purpose of this study. Individual institutional identifiers were deleted from the database before it was transferred.

Instrument

Responses to the *College Student Experiences Questionnaire* (CSEQ), Third Edition (Pace, 1990), were used because of the instrument's relatively high reliability, relevant items, and the fact that a large amount of data has been collected from a wide variety of institutions using this assessment device. Over 300 colleges and universities have used the CSEQ to provide, among other things, "an index of student satisfaction with college" and "student ratings of key characteristics of the college environment" (Pace, 1994, p. 1).

The CSEQ is an 8-page questionnaire that students typically complete in less than 45 minutes (Pace, 1994, p. 2). It consists of a variety of demographic items, 14 "College Activity" scales designed to measure student effort in the learning process, 8 "College Environment" scales designed to measure various aspects of the college environment, and 23 "Estimate of Gains" scales designed to gauge students' assessments of the outcomes of their college experience. There are also two questions each on workload (amount of reading/writing) and opinions about college.

Participants

At the time this study was conducted, there were 16,117 student records in the 1994 CSEQ database. Of these students, 157 (1%) failed to disclose key demographic information (sex, class, and age) and were not included in the analysis. The remaining 15,960 responses consisted of 6,078 (38%) male students and 9,882 (62%) female students. The majority (79%) of the respondents were white (non-Latino); 7% were African-American, 5% Asian, 5% Hispanic, and 1% American Indian. The remaining 3% of the students chose "other" or did not identify their race/ethnicity. Most of the respondents were traditional-age college students, 82% of whom reported being 22 years old or younger, 11% were between 23 and 27, and the remaining 7% were over 28 years old. The class breakdown of the respondents was 32% freshman, 24% sophomore, 14% junior, 28% senior, and 2% graduate. Nearly all of the respondents (95%) were full-time students.

A variety of institution types were represented in the database. The largest proportion of respondents (35%) were enrolled at "master's degree granting colleges or universities," and 30% of the responses came from students at "research universities." Fourteen percent of the respondents were enrolled in universities that granted doctoral degrees. The remaining 21% were students enrolled in smaller bachelor degree granting colleges, associate degree institutions, religious schools, or other classifications. It is important to note that students in the database were not necessarily randomly selected by the institutions using the CSEQ, nor were efforts necessarily made to control for the demographic characteristics of the students.

Procedure

The independent sample *t*-test was used to compare mean ratings reported for male and female students for each item on the "Experiences with Faculty" scale, and the "participated in class discussion" item within the "Course Learning" scale. This test for statistically significant differences between reported means for the sexes was also used for items on the CSEQ that asked students to assess their relationships with other students, faculty, and administrative personnel; for all responses to the "Estimate of Gains" items; and for responses to two questions designed to gauge overall student opinions about their college choice. Due to the extremely large sample size, it is likely that statistically significant, but unimportant, results might be identified. We have used $p < 0.05$ as the cutoff for determining statistical significance for discussion purposes, but statistically significant results for p 's of 0.01, and 0.001 are indi-

cated in the tables summarizing our results. The standardized mean difference (d) for each item was also calculated as an estimate of effect size (Cohen, 1988). Effect sizes of 0.2 or greater were considered meaningful.

Results

Experiences with Faculty

Although we found many cases of statistically significant differences ($p < 0.05$) between the mean responses for male and female students for items on the CSEQ, none of the differences could be considered meaningful. Standardized mean differences ranged from 0.01 to 0.13.

Mean responses for male and female students for items on the "Experiences with Faculty" scale are reported in Table 1. For items in this scale, students were asked to rate how frequently they engaged in the various behaviors indicated. The four possible responses were 1 = Never, 2 = Occasionally, 3 = Often, and 4 = Very Often.

There are slight but statistically significant differences between the mean responses for men and women for all items in this scale except for the "asked your instructor for comments/criticisms about your work" item. Female students reported talking with a faculty member, asking for

TABLE 1
1994 Mean Responses to Items in the CSEQ Experiences with Faculty Scale

Item	Sex	Mean	SD
Talked with a faculty member	Men	2.85	0.85
	Women	2.88*	0.84
Asked your instructor for information related to a course you were taking (grades, make-up work, assignments, etc)	Men	2.62	0.82
	Women	2.66**	0.84
Visited informally and briefly with an instructor after class	Men	2.39***	0.86
	Women	2.34	0.88
Made an appointment to meet with a faculty member in his/her office	Men	2.16	0.81
	Women	2.20**	0.83
Discussed ideas for a term paper or other class project with a faculty member	Men	2.11	0.82
	Women	2.15**	0.82
Discussed your career plans and ambitions with a faculty member	Men	1.96	0.87
	Women	1.99*	0.87
Asked your instructor for comments and criticisms about your work	Men	2.02n/s	0.85
	Women	2.01	0.85
Had coffee, cokes, or snacks with a faculty member	Men	1.40***	0.70
	Women	1.34	0.66
Worked with a faculty member on a research project	Men	1.28***	0.65
	Women	1.23	0.59
Discussed personal problems or concerns with a faculty member	Men	1.38	0.67
	Women	1.47***	0.71

Scale: 1 = Never, 2 = Occasionally, 3 = Often, and 4 = Very Often

*Higher of the item means when means significantly different at $p < 0.05$. **at $p < 0.01$. ***at $p < 0.001$.

information related to a course, making appointments with faculty, and discussing assignments, career plans, and personal problems with faculty more frequently than did male students. The difference between the means for the "discussed personal problems with faculty" item was the most pronounced ($d = 0.13$). Male students reported visiting with faculty informally after class, having snacks with faculty, and working with faculty on research projects more frequently than female students. When the quality of experiences with faculty items were combined to develop an overall score for this scale, no significant difference was found between male and female student perceptions of their experiences with faculty.

Responses to one item in the "Course Learning" scale were also analyzed. Both sexes reported participating in class often. Using the same 4-point rating system, female students reported participating in class discussions more frequently than male students (mean for females = 2.91, for males = 2.86, with standard deviations of 0.85 and 0.84, respectively). This difference was statistically significant ($p < 0.05$) but not meaningful ($d = 0.06$).

Relationships

The relationship items in the CSEQ each use unique descriptors of positive and negative characteristics as rating points for item response scales. Male and female students in our sample felt positively about their relationships with other students and faculty and were somewhat less positive about their relationships with college administrative personnel (Table 2). Women evaluated their relationships with other students and faculty more positively than did men, but the differences do not appear to be meaningful. There is no statistically significant difference between

TABLE 2
1994 Mean Responses to Relationship Items in the CSEQ College Environment Section

Item	Sex	Mean	SD
Relationships with other students	Men	5.34	1.38
1 = Competitive, uninvolved, sense of alienation	Women	5.49***	1.36
7 = Friendly, supportive, sense of belonging			
Relationships with faculty	Men	5.08	1.41
1 = Remote, discouraging, unsympathetic	Women	5.16**	1.38
7 = Approachable, encouraging, helpful, understanding			
Relationships with administrative personnel	Men	4.25n/s	1.67
1 = Rigid, impersonal, bound by regulations	Women	4.24	1.63
7 = Helpful, considerate, flexible			

*Higher of the item means when means significantly different at $p < 0.05$. **at $p < 0.01$. *** at $p < 0.001$.

the mean responses for male and female students regarding relationships with administrative personnel.

Estimates of Gains

When completing the CSEQ, students were asked to assess how much they had gained in 23 areas as a result of their college experiences. The four possible responses were 1 = Very Little, 2 = Some, 3 = Quite a Bit, and 4 = Very Much. Generally, the mean responses for both men and women ranged from "Some" to "Quite a Bit" for each area (Table 3). Standardized mean differences ranged from 0.01 to 0.30.

There are no statistically significant differences in the mean responses for the sexes in the three broadest categories of gains—gains in vocational training, specialization for further education, and broad general education. Male and female students also reported statistically equivalent gains in seeing the importance of history.

Of the 19 remaining categories of gains, female students reported higher gains than male students in 12 areas. The most material of these differences, where the standardized difference between the means exceeds 0.20, were in areas involving understanding one's self ($d = 0.21$) and understanding others ($d = 0.30$). Male students reported greater gains in 7 areas, most of which have to do with analytical skills, technology, or science. The most material of these differences involved understanding science ($d = 0.23$) and technology ($d = 0.24$ and 0.30).

General Opinions About College

Both male and female students in our sample appear to have felt quite positive about their choice of college. Women seemed to feel more positive than men; 86% of the female and 82% of the male students in our sample reported that they either liked college or were enthusiastic about it (Table 4).

Most students of both sexes would attend the same college if they had the decision to make again. As before, women in our sample were more positive in this regard than men; 81% of the women and 78% of the men reported that they either definitely or probably would attend the same college again (Table 4).

Discussion

Interpretation

There appears to be no evidence from the analysis of the responses from this broad sample of college students that women are currently suf-

TABLE 3

1994 Mean Responses to CSEQ Estimate of Gains Items

Student Perceived Gain Areas	Sex	Mean	SD
Vocational training	Men	2.38n/s	0.92
	Women	2.37	0.96
Specialization for further education	Men	2.68n/s	0.85
	Women	2.66	0.88
Broad general education	Men	2.75	0.77
	Women	2.77n/s	0.80
Career information	Men	2.78	0.81
	Women	2.81**	0.83
Understanding of arts	Men	2.04	0.96
	Women	2.14***	0.97
Acquaintance of literature	Men	2.06	0.90
	Women	2.20***	0.94
Writing clearly and effectively	Men	2.61	0.85
	Women	2.72***	0.85
Familiarity with computers	Men	2.63***	0.97
	Women	2.52	0.97
Awareness of other philosophies	Men	2.50	0.88
	Women	2.59***	0.89
Developing own values and ethics	Men	2.71	0.90
	Women	2.87***	0.88
Understanding yourself	Men	2.88	0.87
	Women	3.06***	0.84
Understanding other people	Men	2.80	0.81
	Women	3.04***	0.79
Ability to be a team member	Men	2.63	0.87
	Women	2.74***	0.87
Developing health and fitness	Men	2.36	0.94
	Women	2.40*	0.95
Understanding science—experimentation	Men	2.31***	0.94
	Women	2.09	0.95
Understanding science—technology	Men	2.22***	0.93
	Women	1.94	0.92
Awareness of consequences of technology	Men	2.23***	0.90
	Women	2.01	0.91
Ability to think analytically	Men	2.78***	0.82
	Women	2.71	0.82
Quantitative thinking	Men	2.46***	0.88
	Women	2.30	0.90
Ability to put ideas together	Men	2.77	0.80
	Women	2.84***	0.79
Ability to learn on own	Men	2.89	0.82
	Women	3.01***	0.80
Seeing the importance of history	Men	2.52n/s	0.93
	Women	2.50	0.93
Knowledge about the world	Men	2.23***	0.94
	Women	2.17	0.95

Scale: 1 = Very Little, 2 = Some, 3 = Quite a Bit, and 4 = Very Much

*Higher of the item means when means significantly different at $p < 0.05$. **at $p < 0.01$. *** at $p < 0.001$.

TABLE 4

Respondents' General Attitudes Regarding College and Opinions About Institutions Selected

1994 Percent Responses to the CSEQ Item: "How well do you like college?"

	Men	Women
I am enthusiastic about it	34.8%	38.6%
I like it	46.8%	46.9%
I am more or less neutral about it	14.5%	11.6%
I don't like it	3.9%	2.9%

1994 Percent Responses to the CSEQ Item: "If you could start over again, would you go to the same college you are now attending?"

	Men	Women
Yes, definitely	36.5%	40.1%
Probably yes	41.9%	40.5%
Probably no	15.4%	14.0%
No, definitely	6.2%	5.4%

fering from a chilly classroom climate. This is most probably due to the fact that such a climate does not exist extensively in higher education. In fact, women report enjoying experiences and gains from college equivalent to, or in many cases exceeding, those of men.

Female students reported more interactions with faculty than men. They reported participating more frequently in class. They assessed their relationships with faculty and other students more positively. Ultimately, they generally reported making either the same or greater gains in their personal and intellectual development. As a likely result, their opinions about their choice of college were higher than were men's. Clearly these are unlikely outcomes if an inhospitable classroom environment is widely experienced by women. However, the authors believe the results do not necessarily refute the contentions made in the original Chilly Climate report. Instead, they might verify the utility of the report and the debate and reforms it helped spark. As the suggestions from the initial report have been implemented in many higher education settings, the proportion of women faculty and administrators has continued to rise, and the attitudes about women in society in general have continued to evolve, the classroom climate may have correspondingly improved for female students. Historical trend research conducted along the lines of this study will verify this assertion.

Still, there is cause for some concern, given the results of the current study. Female students do not report interacting informally with faculty after class as often as male students; nor do they interact with faculty as much on research projects. As many in higher education know too well, informal contacts and research work with faculty are often the genesis of relationships that can lead to enhanced occupational and graduate edu-

cation opportunities. However these differences, though statistically significant, are not meaningful in the aggregate.

Female students did not report gains as high as male students in the science, technology, and quantitative skills areas. Though small, these differences do appear to be meaningful. This may be a function of program of study differences between men and women. But of what, in turn, is this a function? Additional research is needed in this area.

In the final analysis, it cannot hurt our students if faculty were to follow the guidelines presented in works like the Chilly Climate reports. Introducing the recommendations found therein and feminist development perspectives, such as those proposed by Belenky, Clinchy, Goldberger, and Tarule (1986) in faculty development experiences, can only serve to strengthen an awareness of individual differences. This, we contend, can never be an inappropriate use of faculty time. It may be particularly appropriate at this time to revisit works on differences in learning styles for all students, and differences between men and women specifically, in light of the potential radical restructuring of educational delivery mechanisms. As new technology, such as the internet and interactive television, is utilized as a means of delivering educational experiences to wider audiences for less money, there may be a differential impact for female students (Kerr, 1990). If there is, we should find out before investing further in these systems.

Limitations

Although we believe the opinions expressed by the respondents in this sample likely approximate those of the U. S. college student population as a whole, the data analyzed in this study had already been collected with sampling techniques that varied from institution to institution. These sampling techniques were not necessarily random or stratified demographically. Consequently, the demographic profile of the sample may not reflect that of the college population. For example, this sample appears to have a higher proportion of women (62%) than the general college population for four-year schools in 1994 (52%, U. S. Department of Education).

The data were collected in one year, 1994, and the opinions expressed were those of students considering their overall college experiences at one point in time. Extreme experiences, if they existed, would generally not show up in an aggregate view of the data. Disenfranchised students may not have participated in the study. Also, it may be possible that women using Gilligan's (1982) "caring voice" and motivated to preserve relationships may tend to evaluate negative experiences more positively than men taking a "justice voice" perspective.

The outcomes of an educational experience are dependent on more

than just the instructional environment. Outcomes depend on individual learning style—information delivery matches, the skills and inherent abilities students have when entering the learning situation, and the effort students make to participate in opportunities and utilize resources available in the institution. The “Estimate of Gains” results should be viewed in this light. In these data, information on student efforts to learn is available, but information on their inherent abilities is not. Further research should be done that controls for the effects of prior learning, inherent abilities, and the quality of student efforts to learn while isolating the gender variable to see if the outcomes of educational experiences differ by gender. Presumably, after controlling for these independent variables associated with the student, if differential outcomes did occur, the cause could be more directly attributable to the learning environment.

Research of the type in this study needs to be conducted for each of the years for which data are available prior to 1994 to see if the results we found are consistent over time or if there is a trend in one direction or another. We would expect a positive trend in female student assessments of their educational environments given the greater attention paid to gender equity in educational program delivery and the higher proportion of women faculty teaching in higher education currently.

Finally, research needs to be conducted to see if the pattern of results we have observed in this study holds true by institution type, student field of study, and student race/ethnicity breakdowns. It may be possible, to cite a few examples, that some institution types are more successful in educating men and women equally, that some fields of study may not be as equitable as others, or that the experiences of women of color may differ from those of non-minority students.

Although we have provided a broader perspective on the question of gender-based differences in perception of experiences in higher education, we have done what others have done—shed more light on the subject while still failing to illuminate it fully. On balance, however, the news appears quite positive. As a group, the women in our large sample do not seem to be experiencing a chilly classroom climate in higher education.

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Moving Beyond Black Achiever Isolation

Experiences of Gifted Black Collegians

Those who seek to understand the experiences of Black students on White campuses in the United States have far more information available to them at the close of the twentieth century than could have ever been imagined at the beginning. Because of the tremendous social, political, economic, and educational changes in our society over the past thirty years there has been an expansion in the study of Blacks in all aspects of the American culture. Not surprisingly, education has played a central role in increasing our knowledge about the lives and experiences of Blacks. Research that has focused on Black students on predominately White campuses overwhelmingly reveals a story of academic difficulty (Fleming, 1984; Nettles, 1988; Mow & Nettles, 1990; Allen, 1992). Consequently much of the research on Black students has focused on those who have pronounced academic needs and who are perceived as academically less prepared than their White counterparts. The disproportionate focus on Black underachievement in the literature not only distorts the image of the community of Black collegians, it creates, perhaps unintentionally, a lower set of expectations for Black student achievement.

The purpose of this study was to examine, through extensive interviews, the academic, social, and racial experiences of high-achieving Black students enrolled in the Meyerhoff Program, a merit-based scholarship program for students in math, science, and engineering. Interview questions (explained below) were focused around three broad areas: academic experiences in and outside of the classroom, social interactions

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and relationships with peers/faculty, and experiences in, and perceptions of, a "race specific" program.

Established in 1989, the Meyerhoff program initially was developed to address the underrepresentation of Black males in the hard sciences. In 1990 the first class of Black females was admitted, and in 1996 the program was expanded to include other minority and White students. At the time of this writing, there were eight classes of Meyerhoffs enrolled in the program. High ability in this study was defined by conventional measures such as Scholastic Aptitude Test (SAT) scores and Grade Point Average (GPA). The cohort of Meyerhoffs interviewed had an average high-school GPA of 3.5 on a 4.0 scale, average SAT math score of 621, and the average SAT total score was 1198. The fall semester average GPA in the senior year was 3.0. This study is based on interviews with the class of 1990, the second class of Meyerhoffs and the first to admit female students. The 1990 class enrolled 15 students, of whom 14 persisted to the senior year, and 12 students (6 males and 6 females) participated in the 60–90 minute interviews.

The Meyerhoff program provides an enormous level of support for the students. There are thirteen different components of the program, including full, or in some cases (for affiliate scholars) partial, scholarship support, study groups, tutoring, personal and academic advising, and connections with mentors in the field who can help with career issues and internship placement. For a description of the program and the services it provides, see Fries-Britt (1997) and Hrabowski, Maton, and Greif (1998).

Factors Affecting the Academic Success of Gifted Blacks

Much of what we know about gifted Black students in general comes from the work of scholars who study Black students in elementary, junior high, and high-school environments. The scant research on gifted collegians combined with the limited research on Black adolescents and high-school students provides some insight into the issues encountered by this population. Like other students, gifted Black students face social-emotional adjustment issues, such as self-concept and acceptance by peers (Rubenzer, 1976; Baldwin, 1991; Roeper, 1991). For gifted Blacks the issues of self-concept are different from those of other Blacks and gifted White students (Exum, 1979). Gifted Black students have the challenge of integrating into their self-concept their racial identification and what it means to have been identified as "gifted" (Cooley, Cornell, & Lee, 1991). Oftentimes these students are challenged by their Black peers as "acting White" (Fordham, 1988) or not being Black enough, as if "gifted Black" were an oxymoron.

We know from the literature that a complex array of factors contributes to the problem, including economics, history, school environment, family, culture, classrooms, and individual motivation. The controversial work of John Ogbu (1993) suggests that the difference in performance of ethnic minority groups is due to their "cultural frame of reference." Ogbu argues that there are different types of minority status, which bring with them differences in the cultural frame of reference based on experiences and encounters with the dominant majority. A major distinction that he makes, based on his research, is that there are significant differences in voluntary and involuntary or caste-like minorities. Involuntary minorities are "people who were originally brought into the United States or any other society more or less permanently against their will, through slavery, conquest, colonization or forced labor" (p. 487). Voluntary minorities moved to the United States or other societies by choice. Their purpose for moving was usually associated with the belief that they would experience better economic conditions, better treatment and, in many cases, greater political freedom, even if they had to start at the bottom of the economic ladder.

Though it is not possible here to explain all of the components of Ogbu's model, several points are worth highlighting. First, Ogbu argues that the academic difficulties that some minorities experience are linked to their status as a voluntary or involuntary minority. Second, members of both groups develop mechanisms for living and coping. However, according to Ogbu these mechanisms are very different based on the "responses" of involuntary minorities to their status of forced incorporation in the dominant society. Third, involuntary minorities develop an oppositional identity and oppositional cultural frame of reference to the majority culture. According to Ogbu,

One of the devices in the oppositional cultural frame of reference is "cultural inversion." In a broad sense, cultural inversion refers to the various ways in which the minorities express their opposition to the dominant group. In a narrow sense it refers to specific forms of behaviors, specific events, symbols, and meanings which involuntary minorities regard as not appropriate for them because they are characteristic of Euro-Americans. At the same time the minorities approve of and emphasize other forms of behaviors, events, symbols, and meanings as more appropriate for themselves because these are not a part of Euro-Americans [*sic*] way of life. (p. 491)

Demonstrating an interest in academics and being identified as having high ability are characteristics associated with Euro-Americans (and increasingly Asians). Consequently, Blacks who exhibit these behaviors are viewed as not being Black enough or trying to be White. Those students who seek to gain acceptance by their peers less interested in acad-

emics, may develop an oppositional identity in order to be accepted. Behaviors associated with academics and studying may be avoided, secretly pursued, or engaged in at the risk of isolation. Critics of Ogbu argue that his framework blames the victims for their underachievement because they are "choosing" an oppositional identity or cultural frame of reference, which means they could choose to interact in the majority culture and develop other "positive" mechanisms for survival like voluntary minorities.

Whether the lack of achievement of Blacks is a result of historical, economic, educational, political, or racial factors, evidence continues to emerge suggesting that gifted Blacks experience this judgment by other Blacks that they are "acting White" and/or think they are better than their peers because of their academic interests. The research of others confirms that issues of race/culture are factors to be considered in the experiences of Blacks who achieve academically. Lindstrom and Van Sant (1986) suggest that it may be difficult for Black students to integrate their racial identity and their giftedness because of the perceived conflict of having a minority status and high academic achievement, which is usually associated with majority culture (Cooley et al., 1991). Cooley, Cornell, and Lee (1991) assert that, "placement in a predominately White gifted program could compound this problem if it strengthens the black student's perception that there is an intrinsic association between giftedness and majority race." Race and balancing Black pride is critical for all gifted adolescents, especially Black youth (Baldwin, 1991). In regard to the role of the peer group, Baldwin (1991) states, "One of the more worrisome phenomena in selecting and placing gifted adolescents (especially males) in programs for the gifted is the negative attitude shown by peers not selected for the programs and the subsequent isolation felt by those selected."

Also enlightening is the extensive literature on Black psychological functioning and identity development, which is too extensive and complex to capture for the purposes of this article. However, as cited in Cross (1991), the literature provides a rich legacy of scholars: Eugene and Ruth Horowitz and Kenneth and Mamie Clark, who were responsible for landmark studies in the late 1930s in early work on Negro identity. More recent scholars (Cross, 1979; Carter & Helms, 1987; Helms, 1993) have continued the investigation of Black identity at the personal and group level. Numerous models have emerged over the past seven decades that seek to explain the identity conversion that has occurred for some Blacks who have moved along the continuum from Negro to Colored to Black to African-American.

Generally, what we know from the work of these scholars (Cross,

1979; Carter & Helms, 1987; Helms, 1993) is that Blacks (like other reference group members) move through various stages of identity development. In these various stages they hold perceptions and opinions of themselves and members of their group that reflect varying degrees of healthy to unhealthy attitudes about Blacks. In some stages of racial identity Blacks compare themselves to the White population in ways that celebrate White cultural characteristics and devalue Black cultural characteristics. As Blacks move toward a healthy Black identity, they are able to embrace and value what is both positive and negative in Black and White cultural expression.

Providing some intersection between the work of Ogbu and theories on Black psychological functioning, yet different, is the work of Claude Steele, a psychology professor at Stanford University. Steele, like others, has also determined that academic decline occurs in the lives of minority students. Steele (1995) describes the concept of "stereotype threat" and "dis-identification" with education as factors contributing to the problem. His central thesis is that there are a number of disruptive pressures that occur in the lives of minority students related to racial stereotypes. Over time these incidents diminish their academic performance. Hummel and Steele note that "the pressure begins with students' knowledge that negative stereotypes about their groups could apply to them. They can feel their intelligence is constantly on trial. They may not believe the stereotype but it becomes a threatening hypothesis that they can grow weary of fending off. Over time, the small incidents can heighten pressure and push students to stop identifying with achievement in school. They may even band together, making dis-identification the pattern" (1996, p. 28). Steele's notions of stereotype threat and dis-identification are consistent with Ogbu's concepts of oppositional identity and cultural inversion. Both conclude that a process of withdrawal or dis-association from behaviors assumed to be Euro-American occurs for some Blacks. The method and mode of analysis used by each may differ based on discipline. However, each theorist continues to point to a dilemma often faced by Blacks and other minorities of having to manage competing choices and/or managing multiple affiliations in multiple contexts.

Finally, the role and influence of family/parents is significant in the lives of gifted Blacks (Hrabowski, 1991; Hrabowski, Maton, & Greif, 1998). The family/parental dynamic is very complex given the changing nature of the family unit, changes in socioeconomic status, and educational level of parents. Ford (1996), sought to dismantle some of the myths and assumptions surrounding the role and relationship of Black families in the educational process. All too often the Black family and

extended community is seen as the culprit of underachievement of Black students (p. 162). Black parents are assumed to have little interest in their children's education, especially if they are not involved in the school; the role of grandparents and extended family is associated with economic support systems rather than academic support; and the matriarchical system of the Black family is viewed as dysfunctional (Ford, 1996). There is evidence to support the fact that the family can have a positive as well as a negative effect on students' academic achievement. For certain there are Black parents who are unsupportive and play a detrimental role in the academic achievement of their children, however, others commit their personal energy and financial resources to enhancing the academic success of their children (Hrabowski, Maton, & Greif, 1998).

The findings of this study are presented within the context of two significant themes: (1) Black achiever isolation and (2) the impact of race and a "race specific" program. The results of this study confirm some of the findings in the literature, namely, that high-ability Black students can experience isolation from their peers, and that gifted Black students must balance issues of race and being connected to the extended Black community. However, this study adds important findings about the benefits for high-ability Black students when they establish successful connections with other Black students who excel academically. The relationships that have been established with fellow Meyerhoffs provide support for both their racial and academic identities. The students in this study have the benefit of meaningful peer relationships and support for academic achievement that is rarely experienced by high-achieving Black collegians.

Methodology and Data Collection

The twelve students interviewed for this study were contacted (by letter) in their senior year. The interview questions focused on the academic, social, and racial experiences of these high-ability students on campus and in the Meyerhoff program. The academic and social integration questions were developed based on the six principles that Tinto (1987) suggests should be in place to enhance the academic and social integration of students. While the principles were intended to guide universities, they were modified in this study to examine the efforts of a comprehensive intervention program. Using the principles as a guideline, a series of questions were developed under each to explore the academic and social experiences that students had in the Meyerhoff Program (see the appendix for complete interview schedule). Examples of academic and social integration questions include:

1. Did you feel academically prepared to succeed at UMBC? Please explain why or why not.
2. Describe how the Meyerhoff Program has been supportive of your academic needs.
3. Do you feel that the faculty you have encountered are interested in teaching and working with students? What evidence do you have to support your opinion?
4. How important are the other Meyerhoff Scholars to you?

Because the students were participants in a program designed to support high-achieving Black students, this researcher was interested in understanding their perceptions about being in a "race specific" program with peers. We know from the literature that academically talented Blacks experience difficulty in establishing peer connections and in balancing their dual identity. Consequently, a series of questions were included in the interviews to examine their racial experiences and their perceptions about being in a "race specific" program. Tinto's (1987, 1993) framework of academic and social integration does not explore issues of race, therefore questions were developed to understand the importance of race in the academic experience of these students. Examples of questions about race and racial experiences include:

1. Are there benefits (and disadvantages) to being a Black student in a program like the Meyerhoff program?
2. How important was it to you that all of the students in the Meyerhoff program would be of the same racial group? What difference, if any, did it make in your decision to become a Meyerhoff?
3. How important was it that the students in the Meyerhoff program were high-achieving Black students?

Findings

Black Achiever Isolation

One of the most important themes to emerge from the interviews is the theme of Black achiever isolation. There is significant evidence of isolation in the literature on Black students (Fleming, 1984; Mow & Nettles, 1990; Allen, 1992), especially for those who attend majority White campuses. However, as we know from the literature on high-achieving Blacks, the nature of the isolation for gifted Black students takes on a different dimension. In addition to experiencing isolation in an expected context of minority students—in a majority situation gifted Black students are likely to experience isolation in the Black community

as well. The finding of this study suggests that the students in this study had similar experiences of isolation as other high-ability Blacks. However, their membership in the Meyerhoff Program helped them establish peer networks and to diminish the feeling of isolation. Evidence of this theme occurred throughout the interviews.

Like many other high-achieving Blacks, the students in this study did not have much exposure and interaction with other Blacks at the high-school level who were excelling academically. One student shared the following account. "In high school I did not really associate with African-Americans because I was always in the higher classes and they were always White. So, basically, when I came here I was shocked that Whites were kind of segregated from the African-American students. But because of the program, I learned how to study with and get along with other African-American students." This same student, when addressing another question about the importance of the group being high achievers commented, "It was definitely important that the students were high achieving. I think that is why I shut myself off from the African-American students in high school. The females that I had to interact with, their highest goal was, I guess, to become married or to become a beautician." Embedded in this account is the very painful and sad truth about the early isolation and discomfort that some high-ability Blacks can have from members of their own racial community.

Even in cases where students attended a predominately Black high school, they still had less than satisfactory experiences in their interactions and relationship with other high-achieving Blacks. Although the high school was overwhelmingly Black, the majority of the students in the honors or college accelerated classes were White. Consequently, fewer opportunities existed to establish relationships with other Black students who were interested in academics. This lack of contact throughout high school with other Black students who were academically talented formed an image for students that they were alone and belonged to a small "minority" of Black students who had high academic ability. Subsequent experiences in the Meyerhoff Program, with other Black achievers, provided these students with a new awareness and esteem for the intellectual talents of Blacks. Meeting and studying with other talented Black students established a new expectation and encouraged the students to study harder. One student commented, "I am not accustomed to being in a program with all achieving Black students. I have always been in predominantly White schools. The biggest support is just having other Black students."

These observations perhaps capture best the essence of what the Meyerhoff program has been able to provide for the majority of the students

in this study. For all of the students the Meyerhoff program represented the first time that they were surrounded by a large number of high-achieving Blacks who were striving toward the same goal of academic excellence. Another student stated, "I come from a background where I didn't have a lot of African-American students doing really well, so that is one thing I gained from the Meyerhoff Program, it let me see that I wasn't the only one doing well. Usually you have Blacks who do well and Blacks who don't do well—we all catch on at the same time." This same student later, when talking about the importance of the program noted,

Programs like this are very important because it puts an emphasis on education and doing well and showing that it is positive. We hear about stars like Michael Jordan, Michael Jackson, Janet Jackson but how often do we hear about Dr. Ben Carson who is a star. We don't put a lot of emphasis on that in the Black community. You are not considered cool if you are smart. Although this is the first place I ever found where it was cool to be smart.

The students also discussed the attitudes they encountered from other students because they were enrolled in the Meyerhoff program. These comments reflect the feelings of isolation they experience from those outside of the program. One student commented,

You run the risk of some other students being angry with you because you are a Meyerhoff or they think that you think that you are better because you are a Meyerhoff, which is usually the case [what they think]. There is a stereotype that people think the Meyerhoffs are stuck up, once they get to know us it's usually, you have to get through that first few months of school of people being upset with you because you are a Meyerhoff. They think you have it easy, they think you are rolling in the money. Some of the students who feel this way are Black, some are White. I have had White students say it's not that you are smarter, it's that you have that money because you are Black. Black people just say you think you are all that because you are a Meyerhoff, you are not any better than we are, you just think that you are all that, and they give you a hard time. They think we are snotty and that's not usually the case, we are human, we like to have fun just like everybody else.

Similarly another student observed,

There is a lot of jealousy, a lot of students don't always say what they are jealous about or say that they have some type of envy, but I remember when we got our computer and they (I didn't go through this personally), but they had some racial slurs written on the message board, computer nerds, there were other Black students on the hall, but you know when you get something that you are excited about, instead of being calm and cool and wait until you get to your room behind closed doors and then celebrate, people get offended by that, and there were a lot of racial slurs because of that. Mostly White students, honors floor, we were the only Black students really on the floor. It

struck the students odd that all of these students were Black in one program, they wouldn't say it but you could tell, after a while the stereotypes broke down and we started mingling more, and we became friends and so forth just from talking.

Though these students may have experienced isolation from others, there were a number of observations and comments about the importance of interacting with other high-achieving Blacks. One student stated, "I looked forward to working with the guys [referring to the first class of Meyerhoffs], studying with them. Even though I missed the Meyerhoff weekend, I came for the Black Student Organization weekend, and I met a lot of students, mostly seniors. The students took a deep interest in me. It was nice seeing a lot of other African-American students." Eight of the 12 students interviewed noted that having access to other bright Black students was very important. One student commented, "One of the special things about the program is the number of meetings we have to discuss different things. Also, the fact that there are a number of other Black students studying and concentrating."

The desire to connect with other high achievers does not satisfy all of the needs these students have to affiliate with the Black community. Several students noted that it was important for them to interact with other students on campus who were not in the Meyerhoff program. Not only were they encouraged by the staff to interact with students outside of the program, but most of the Meyerhoffs sought these friendships on their own. Many of the students indicated that they wanted to maintain their own sense of identity apart and separate from the Meyerhoffs. Although they were proud to be Meyerhoffs, they also wanted to be recognized as individuals. In a discussion about disadvantages of the program one student commented, "You get labeled as dry. People say, 'these guys are dry.' I kind of shy away from being grouped."

The Impact of Race and a "Race-Specific" Program

A second finding from the interviews indicates that being in a "race-specific" program contributed to the success of the Meyerhoffs academically and socially. Students were asked a number of questions about race to see if being in a "race-specific" program enhanced academic and social integration. All of the students noted that there were benefits to being in the Meyerhoff program. The benefits cited most often were: (1) the resources offered in the program, such as money/scholarship, computer, and tutoring; (2) a community of high-ability Black students with whom they could relate and seek support, and (3) faculty who were aware of the academic ability of the students in the Meyerhoff Program. One student commented, "You stand out a lot on campus, people expect

you to do well, people are very positive when they see you. I guess because Blacks are not known for doing anything academic, it's usually basketball or singing, it usually never is academics."

Several disadvantages were noted. One of the primary issues was dealing with students who resented the Meyerhoffs because they were "getting better treatment." Four of the Meyerhoffs gave examples of how they were questioned about the merits of the program and even their academic skills. For example, one student commented, "The down side is the people who think the program should be both Black and White. They don't think the school should have such a program, and they voice it." Similarly, another student stated,

There were disadvantages in the beginning. You were kind of segregated or separated from other African-American students, and I think that made it hard for us socially. It also hurt us as far as the Caucasian community is concerned, because they felt as though we were almost like on financial aid or something, and we didn't earn our right to be here and we were kind of not accepted by anybody. Some Black students felt as though we were getting special treatment. Now that there are so many of us, they can't just pick us out.

These observations illustrate the desire that these students often have to be included in the larger community of Black collegians and not to be singled out as different. Moreover, having a critical mass of other high-ability Blacks provides a higher level of comfort, support, and ability to "blend in."

All of the students felt that their experiences at UMBC would have been different without the Meyerhoff Program. Some students had stronger feelings about this than others. Most students noted that the major difference would be in the amount of support they would receive. A number of students mentioned that they would not have as many close relationships with people who were experiencing similar events. For example, one student stated, "I think some of my experiences would have been different without the program. The people in the program are like brothers and sisters, you automatically have somebody else who is going through the same thing." These comments reflect the importance of having a community of support and of peers to whom you can relate and who understand what you may be feeling. Similarly, a second student noted, "My experience without the Meyerhoff Program would be totally different, I don't know if I would have the support system that I have now. I wouldn't say totally different. I would just say different. I would still have access to tutors through another program, but I wouldn't have the contact with the administrative staff of the Meyerhoff Program, their advice."

When asked about the racial make up of their social peer group and the faculty they interacted with, ten of the students reported that they had close personal relationships with students who were of the same ethnic and racial background, and two reported having relationships with students of other ethnic and racial backgrounds. However, most of the interaction with students from different ethnic and racial backgrounds was for the purpose of studying or for participating in organized sports activities. There were a few examples that included general social interaction with other ethnic minorities. However, the emphasis was studying and sports. For example, a student commented, "I don't have too many close relationships. The ones I have here, I can say most of them are Black. I can count them on one hand. I study with students of other ethnic groups, I play basketball with students of other races, I hang out with them, I don't care what race you are. If you are someone I want to be with I will hang out with you." With the exception of one student, most of the faculty with whom students interacted were of a different racial background. However, students had contact with Black professionals in the field and other Black professors outside of math and science.

In terms of their experience in a "race-specific" program the students offered several observations. Eight students expressed that it was more important that their fellow Meyerhoffs be high-achieving students than they be Black. For example, one student commented, "It is good to be around high achievers because, I don't know if it's the competition or what it is, but they tend to push you at least for a while, and I think that's great." Another student offered a more detailed answer.

It was important because it let you know that there were resources of people, human resources of people, that you could go to if you needed help with anything. Being an African-American male has been about breaking down barriers. You know that whatever you do, you are representing the program and Black males and you know that it is important that you represent them well, more so than Black women. Black women have been looked upon as being more responsible and achieving more.

For at least half of the group it was important in the beginning that the program targeted Black students. The degree of influence this had on students varied. One student stated, "The fact that the Meyerhoffs were the same ethnic background was a deciding factor in terms of companionship. It was more like bringing ease and comfort to the undergraduate situation." Another student noted, "It was important to me that the students in the program were Black and high-achieving Blacks. I saw it as people who could not only compete with me, but I saw I was going to have some competition in school, because if you compete with somebody then you are constantly pushing for the best, and I saw it as stu-

dents who could help me." In some cases where students initially had indicated that it was not important, the subsequent experience with the program suggested that the importance of race might be different now. For example, it was noted that "at the beginning of the program, it wasn't important that the students were in the same racial group. Looking back on it now, it would have been a lot different if we were different racial groups. It's easy to do things outside of academics with people of the same ethnic and racial background." Similarly, another student for whom race initially had not been important noted, "When I first entered the program, it didn't matter that all the students in the program were Black, it didn't influence me to come. Right now I look back on it and it's scary [to think what it would be like in a mixed group], it's a good feeling. I am glad that the students are Black in the program now."

Race was not always seen as a necessary factor. In four cases, students simply stated it was unimportant relative to other issues, such as having access to resources and support. An example of a typical response was, "It didn't make a difference to me that the students would all be Black in the program, I was happy to receive money to go to school. I didn't want my parents to have to pay for school." The group was divided on their personal experiences with racism on campus. At least five members of the group said that they had never experienced racism directly; however, a few followed up by saying that they had heard about problems or were aware of others having problems. One student commented that they saw racial remarks written on desks in the classroom and found this uncomfortable and offensive. Another stated, "I don't think outright that I have experienced racism, not personally. I am sure those activities go on. I've heard all kinds of remarks that have been made to other students about being a female or about being Black."

The rest of the group (seven) reported "subtle" forms of racism coming from other students and, in a few cases, from the faculty about the program and the academic capability of the Meyerhoffs. Nine of the students interviewed indicated that race contributed to their motivation to do well. There were various degrees of influence described. Examples include: "I think race does contribute to my motivation to do well. In fact, I am positive that it does. My parents and grandparents always told me that being Black you have to be twice as good to go half as far. I want to do well for myself and I want to do well for the women around me." Another student commented, "Yes, that [race] and my brothers, because they are seven years younger than I am, and they look up to me and so I want to set a good example for them and also an example for Blacks in general, so that they can see that somebody can make it and there aren't a lot of PhDs, which is what I want to do."

Discussion

The experiences of the students in this study indicate that academically talented Blacks may enter college with few, and in some cases, no academic relationships with other achieving Black students. There is also evidence to suggest that their membership in a group of high-achieving Blacks was met with some apprehension by Black students not enrolled in the program. Although it was important to be around other high-achieving Blacks, the students in this study wanted to be connected to the extended Black community on campus. Opportunities should be made available for academically talented students to network as early as possible (junior high and high school) so that they can be introduced to the larger community of talented and gifted Blacks. Certainly programs like the Meyerhoff Program have attended to this need; however, the intervention may need to occur sooner. High achievers should be encouraged to study together. This is not to suggest that they avoid studying and working with students of less talent. In fact, it is probably essential that average students work with talented students to increase their own academic capability and motivation to do well. However, working with other gifted students will provide an opportunity for these students to gain from the experiences of working with others who are also academically talented to diminish the negative experience of feeling like the "only bright Black student" in the group.

The finding on the impact of race and a "race-specific" program raise a longstanding debate over the merits of homogenous or "like-type" communities based on gender and/or race. Students have always been grouped according to some set of criteria such as chronological age, grade level, and academic ability (Leake, 1992). Because of legal barriers, Black students historically had to be grouped together in school with other Blacks. A positive outcome of this legal discrimination and social engineering has been the development of a very successful and strong legacy of Historically Black Institutions (HBIs). As a result of the Civil Rights and Women's movement, new legislation was passed that changed forever the frontier of educational policy, including criteria for grouping students for educational purposes. Those who support gender- and race-specific environments argue that to deny single sex/race environments in the name of equality is a violation of civil rights (Fox-Genovese & Podles, 1995).

Although there may be significant problems with creating single sex/race environments, proponents of these environments point to the tremendous difference they can make in the academic and social development of the members. In describing the importance of creating im-

mersion schools for African Americans, particularly males, Leake (1992) noted,

In the theoretical sense, this model would provide a framework for the development of a total learning environment designed to fit the needs and draw up the strengths of African American students. More specifically, it would help students acquire competence in social skills, communication, problem solving, critical thinking, effective citizenship, and male and female identity development, particularly as these competencies relate to ethnicity. (p. 26)

Tierney's (1992) work supports this notion of a "race-specific" program. Tierney concludes that students need to be connected to their culture if they want to be successful. "Instead of implying that being drawn back to one's own culture is a shortcoming, one might accentuate that ripping one away from his or her native culture is detrimental and harmful. Rather than think of college as an abrupt transition from one world to another, we might try to conceptualize college life as reinforcing and incorporating what one has learned from one's extended family" (p. 615). The Meyerhoff Program provides a climate and support system that resembles the extended family. Even more important, for Blacks who are unable to find support for their intellectual pursuits the program provides a supportive community where being gifted and Black is the norm.

Campus policies must continue to consider the importance of community support, including the support that comes from a "race-specific" program. Programs designed to retain students should consider the establishment of mentor and peer counseling programs that bring students in contact with members of their racial group or a "like-type" community of peers, such as high-ability or honors students. These communities are certainly not new on college campuses. Perhaps what is new is the need to construct different communities of support for minority students. If Black students can find the support within a cultural and community framework that is familiar, it may increase their success in integrating into the larger White campus. The community of Black collegians will always have a wide range of needs. On majority White campuses these "like-type" communities have the potential to create a support system that provides some of the essential ingredients that historically Black campuses have provided for decades.

Race-specific programs are not for every student. In fact, many Blacks argue strongly against them and will decline involvement in "race-specific" communities. Often the pressure to "fit-in" on predominately White campuses serves as a barrier to Black students establishing a support community of other Black collegians. However, campus poli-

cies and programs should continue to provide opportunities for those who need and desire a "race-specific" experience.

Given the tremendous support offered by the program and the high academic profiles of the students, some might question the merits of studying a "successful" group of Black students who seemingly have few problems. Put differently, what could research on high-ability Black students possibly teach us compared to what we could learn from Black students who are less capable and who do not have the financial, academic, and social support of a program? I would submit that both groups offer a unique insight into the larger community of Black collegians. Moreover, what we learn from the experiences of both groups increases our ability to support the needs of Black students at all levels of academic ability. Though high-ability Blacks may be top academic achievers within the community of Black students, there remains a significant gap in their achievement when they are compared to White and other minority counterparts who share the same demographic profiles (Miller, 1995). Miller found that while the overall achievement of non-Asian minorities has improved tremendously since the 1980s, "there are also large within-social-class differences in academic achievement patterns among groups. At each social class level, Whites and Asians tend to do much better academically than Blacks, Hispanics, and American Indians" (1995, p. 338).

As we enter the twenty-first century and are faced with the decline in Black student enrollment and with Black students' underachievement, Scott Miller's recommendation to "pursue strategies to improve the educational performance of middle-class minorities and meet the needs of minority high achievers (1995, p. 361)" is essential. We can no longer afford to neglect any portion of the Black student community, especially those who hold significant intellectual, political, and social promise for the nation. Understanding the needs and experiences of this population is the first step to closing the achievement gap. Perhaps the lack of interest in studying this population is a result of the overwhelming need to assist and support underachievers—a commitment we must continue—or the mistaken assumption that the academic success of high achievers overshadows any of the problems they encounter along the way to that "success" or that there is "more" to learn from underachievers than from high achievers.

Although the Meyerhoffs represent a different profile from the "majority" of Black students in higher education as it pertains to educational achievement and, in some cases, family background, they share the common variable of race with all Black students. Like other Black students they have experienced the "subtle"—and not so subtle—forms of racism

that occur on predominately White campuses. Even with high academic ability, Black students continue to need the support that comes from a "like-type" community of other Blacks in general and gifted Black students in particular.

Conclusion

This article began by acknowledging the escalation in research on Black students in the twentieth century. One of the many reasons this occurred is because Blacks students were being admitted on White campuses at an increased rate in the early 1970s, and we knew very little about their needs. However, less than thirty years later we are embroiled in a debate over criteria for minority student access to higher education. The policy decisions resulting from this debate could dramatically impact access for minority students. If recent decisions (California ruling on Proposition 209 and the Texas Law School) are an indication of what is to come, then we will experience a tragic decline in the enrollment levels and degree completion rates of Black and other minority students. These declines will have a direct impact on the social, political, and economic fabric of our nation. In education the decline will have an effect on research and the nature of the research on Blacks in the future.

As we revert back to a more exclusive rather than inclusive admissions process, very few minorities will meet the conventional academic measures obtained by SAT and GPA scores. Minority students have fallen short on these measures because of long standing and well-documented obstacles, such as legal denial and access to education, inadequate and poor educational opportunities, financial limitations, few mentors and role models, and racism. Despite the overwhelming evidence that indicates that SAT and GPA only predict success in the first year, we continue to hold these tests as the only "real" and valid indicators of ability. Though the success of the Meyerhoffs can in part be contributed to these students' ability, in their own words they express the importance of the support of the Meyerhoff program and the interaction with other bright Black students. Developing more programs like the Meyerhoff Program will go a long way toward moving high achievers beyond the isolation they often experience.

Educators should celebrate the advancement in research on Black students. However, as we move into the next century, research must be accelerated and broadened to study the group differences and experiences in the Black community. As we did in this study, we must learn from Black students who meet the conventional measures of success. The

stigma associated with being intelligent and Black often leaves this segment of the Black community isolated in the White as well as the Black community. Educators and researchers have much to learn from this population, and they have a substantial contribution yet to make to the literature on Black students.

APPENDIX

Senior Year Interview

I. Institutions (Meyerhoff Program) should ensure that new students enter with or have the opportunities to acquire the skills needed for academic success.

1. Did you feel academically prepared to succeed at UMBC? Please explain why or why not.
2. Describe how the Meyerhoff Program has been supportive of your academic needs.
3. Describe how your work habits have changed since your freshman year, for example, study skills and work expectations of self.

II. Institutions (Meyerhoff Program) should reach out to make personal contact with students beyond the formal domains of the academic life.

4. Do you have any personal contacts with faculty outside of your classes? If yes, describe the type of interactions you have outside of the classroom.
5. How often do you talk with faculty about non-academic issues?
6. Do you have any personal contact with UMBC administrators or Meyerhoff staff members outside of the Meyerhoff Program? If yes, describe the type of interactions you have outside of the program.
7. How often do you talk with UMBC administrators and Meyerhoff staff about non-academic issues outside of the Meyerhoff Program?
8. What has been some of the non-academic activity that you have been involved in at UMBC?
9. How did you learn about these non-academic activities? Are you satisfied with the amount of contact you have had outside of the classroom and outside of the program?
10. What research experiences have you had outside of the classroom and have they been valuable?

III. Institutional (Meyerhoff Program) retention actions should be systematic in character. (These questions were asked of staff members.)

What happens if a student is not performing well in the program?

Are there systematic mechanisms in place to keep students academically on course? If so, please describe them.

IV. Institutions (Meyerhoff Program) should start as early as possible to retain students.

11. When were you first contacted by the Meyerhoff Program?
12. What was the nature of the contact? (Letter, phone call, visit, interview, etc.)
13. How many times were you contacted before you decided to attend UMBC?
14. What do you remember most about your contact with the program?

V. The primary commitment of institutions (Meyerhoff Program) should be to their students.

15. Do you feel that the faculty you have encountered are interested in teaching and working with students? What evidence do you have to support your opinion?
16. Has the Meyerhoff Program staff let you know that they are committed to you as a student, if so how have they shown their commitment?

VI. Education, not retention, should be the goal of institutional (Meyerhoff) retention programs.

17. In what ways have you been encouraged to excel academically?
18. How is academic achievement rewarded and recognized by the program?
19. What if anything, has been unique about your educational experience?
20. What are the most special characteristics of the Meyerhoff Program academic support component?
21. How important are the other Meyerhoff Scholars to you?

VII. The Importance of race and the academic experience (an added category to Tinto's (1987) principles)

22. Are there benefits to being a Black student in a program like the Meyerhoff program at UMBC?
23. Are there disadvantages of being a Black student in a program like the Meyerhoff scholars program at UMBC?
24. Do you feel your experience at UMBC would be different without the Meyerhoff Program? If so, how and why? If not, why not?
25. Have you experienced racism on campus? If so in what ways?
26. Does race contribute to your motivation to do well in school? What other things contribute to your motivation?
27. Based on your experience, how important would you say programs like the Meyerhoff Program are?
28. Are most of the students with whom you have close personal relationships of a different ethnic and racial background or are they of the same ethnic and racial background?
29. Do you have substantive interaction with students from other ethnic or racial backgrounds? Describe the type of interaction you have. Are most of the faculty with whom you interact of a different ethnic and/or racial background, or are they of the same ethnic and racial background?
30. How important was it to you that all of the students in the Meyerhoff program would be of the same racial group? What difference, if any, did it make in your decision to become a Meyerhoff?
31. How important was it that the students in the Meyerhoff program were high-achieving Black students?
32. What has it been like to be a Black (male/female) in the Meyerhoff Program?
33. Is there anything you would like to tell me about your academic and social experience that I have not asked, or anything about the Meyerhoff Program?

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Review Essay

The Student Aid Game: Meeting Need and Rewarding Talent in American Higher Education, by Michael S. McPherson and Morton Owen Schapiro. Princeton, NJ: Princeton University Press, 1998. 143+ pp. \$29.95

REVIEWED BY EDWARD P. ST. JOHN, Indiana University

College affordability, along with other issues related to the public investment in education, has become a major public policy concern. Indeed, growing middle-class concern about college affordability set the stage for the new tax credits promoted by President Clinton and passed by Congress in 1997 (Burd, 1997b). Concern about the expense of college also led to the creation of a national panel on college costs, which has recently become the center of controversy: its draft report was criticized by Congressional conservatives for not being sufficiently critical of excessive spending in colleges and universities (Burd, 1997a).

Among the policy studies that initially focused public attention on affordability was Michael S. McPherson and Morton Owen Schapiro's *Keeping Colleges Affordable* (1991), a carefully crafted study that documented how the declines in federal grants in the 1980s had reduced access for the poor. In fact, their earlier book had ushered the term "affordability" into common usage among higher education policy analysts. However, the common meaning of the term in the policy arena became more of a middle-class issue than this earlier text had indicated, an irony, given the new issues addressed by McPherson and Schapiro in their new book. Indeed, in their rush to keep colleges affordable for the middle class, federal policymakers overlooked the historic role federal student grants played in equalizing opportunity to attain a postsecondary education for potential students from poor families.

In their new book, *The Student Aid Game: Meeting Need and Rewarding Talent in American Higher Education*, McPherson and Schapiro not

only reexamine the question of opportunity but also address other critical policy issues. They broaden this new study to include merit aid, what they characterize as "rewarding talent," as a dual purpose of student aid. They also identify the strategic use of student aid by institutions as an important policy issue. They warn that the newest institutional approach, strategic maximization, "can be a pretty ruthless business" (p. 17). Hopefully this warning is heeded as the concept of "rewarding talent" as an aid strategy works its way into common usage among financial and policy analysts in higher education.

This is an important book for everyone interested in higher education policy and finance, including faculty who are extensively involved in academic governance. McPherson and Schapiro untangle complex issues that have implications for the entire academic community. The book is remarkably easy to read and understand for a text that deals with the econometrics of higher education, which is why it should be widely read and pondered. In this review I focus on three aspects of McPherson and Schapiro's new study: the continuing need to deal with affordability in the policy arena (discussed by the authors in Part 2), the new complexities of institutional finance (Part 3), and the importance of merit aid (Part 4). In addition to highlighting the authors' arguments on these topics, this review provides readers with additional food for thought as they read McPherson and Schapiro's new book.

First, McPherson and Schapiro again focus their attention on educational opportunity, raising the question "are we keeping college affordable?" (p. 23). They document the growing burden for families in paying college costs, demonstrating that affordability has become even more problematic for students from low-income families. However, they observe that tuition increases did not deter enrollment by students from middle-income families; instead, they argue, the returns to education attracted middle-income students into college in spite of the increased cost of attending. These conclusions provide a possible answer for a question that has perplexed many financial and policy analysts: why were enrollments higher than expected during a period when need-based grants declined? By separately examining students from low-, middle-, and upper-income families, these authors are able to distinguish between the effects of costs on the poor and on the middle class. This distinction has been overlooked in the past by analysts who assumed that a standardized measure of price response applied to all students and raised questions about higher than expected enrollment rates for middle-income families (Hansen, 1983; Kane, 1995). Thus, consistent with their earlier book, McPherson and Schapiro make an important distinction between low-in-

come and middle-income students, which gives visibility into the affordability problem, at least for the poor.

However, because McPherson and Schapiro do not abandon the concept of net-price, they may have underestimated the financial problems facing middle-class students. Their method involves estimating the cost to the government of subsidized loans (about fifty cents on the dollar) and adding this subsidy to the aid side of the net price equation, rather than separately estimating the direct effects of loans on enrollment. Given this vantage, they conclude: "All these trends point to the urgency of using increasingly scarce public dollars for higher education well. As we have argued here, recent experience confirms the prediction based on theory and econometric evidence that rising prices for middle- and upper-income students in public higher education will not discourage enrollment" (p. 50). I agree with their arguments about using scarce dollars well and the reality that access for low-income students is the biggest challenge. Unfortunately, the perpetuation of net-price logic limits their ability to estimate the effects of loans on keeping colleges affordable for middle-income students. We need to use an alternative lens to untangle why the middle class is concerned about affordability.

The alternative approach is to examine how students with different financial background means (low-income, lower-middle-income, etc.), respond to different types of prices and price subsidies, an approach to the study of price effects advocated by Stephen P. Dresch (1975) more than two decades ago. When we take this step we find that low-income students are more responsive to grants than to tuition, whereas middle-income students are about as responsive to loans as to tuition (St. John, 1990). When these more complex price-response measures are taken into account, the pattern of enrollment redistribution in the 1980s (St. John, 1993) and the 1990s (St. John & Asker, forthcoming) are better explained by actual changes in tuition and student aid (grants and loans): the declines in grants in relation to tuition have been most problematic for low-income students, whereas the expansion in loans has kept colleges affordable for middle-income students.

When we take these more complex forces into account, we can explain enrollment change without resorting to the "other forces" (e.g., earnings) as an explanation for enrollment increases by middle-income students. Thus, McPherson and Schapiro make sufficient adaptation to the net-price concept to discern that the poor continue to have the most serious problem with affordability, a fact overlooked by some analysts who adhered more strictly to net-price assumptions (e.g., Hansen 1983, Kane 1995). But this partial reconstruction of net-price logic does not

sufficiently denote the crucial role of loans in maintaining affordability for the middle class and, by extension, the influence that the debt burden had on the silent majority's support for the new tax credit option.

Second, McPherson and Schapiro turn to the complex intervening issue of institutional financial strategy. Their exploration of this topic, which they had not addressed in their previous book, provides visibility into the role of financial strategy within colleges and universities. The decline in federal need-based grants has made it more difficult for colleges to maintain need-blind admissions, forcing many of them either to stretch their aid dollars, making more strategic use of grants, or to move toward a maximization strategy. Both of these strategies increased the impact of institutional funds for student aid, but these methods raised even more questions about fairness. McPherson and Schapiro are particularly concerned about the increasing use of "second reviews" of college applications: using financial need as a criterion for wait-listing students who might otherwise be admitted, a feature of the maximization approach. They point out: "The moral dilemma these schools must face: Do they tell their wait-listed students (or, for increasing numbers of schools, their transfer applicants) that the failure to withdraw their financial aid applications means that their chances for admissions will be slim or none?" (p. 102).

Their analysis and discussion of institutional strategies raise questions that should be debated on most campuses. When does adherence to need-blind admissions cause too much of a stretch in aid budgets? When does the targeting of aid on students who can help the institution the most financially cause students and the public to lose their respect for higher education? These authors not only do a particularly good job of raising the questions, but they also hold a position that there are boundaries that should not be crossed. Indeed they seem to hold fairly conventional notions about finding ways through the puzzle, as was evident in their treatment of merit aid.

Next McPherson and Schapiro explore the exceedingly complex terrain of how various colleges use merit-based aid to reward talent. They explore ways colleges make strategic use of merit aid to attract students with better scores than they could attract without taking this market-competitive approach. From their conclusions we can gain insight into what they think is a proper course of action on the use of merit aid:

The American system of selective admissions to a competitive set of institutions tends to sort students with the highest academic qualifications and promise into the institutions with the most ample resources with which to subsidize the students' education. This is the right kind of pattern of resource allocation to wish for in higher education—society surely gains more from

investing more in the education of the most talented—although no one really knows how close we are to right in the relative amounts of resources we devote to the education of the more and less talented. (p. 143)

Thus, McPherson and Schapiro seem more comfortable with elite institutions allocating their own resources to talented students with financial need than with more marginal institutions trying to leverage their student-aid dollars to attract students with higher test scores than they might otherwise attract. However, they also close with a plea that should not be overlooked: “[It] is of the utmost importance that we not lose sight of the role that student financial aid must play in keeping opportunities in American higher education broadly available” (p. 143). So, in their efforts to address their newfound concern about rewarding talent, they did not lose sight of the issue of providing access.

The Student Aid Game raises issues that merit serious consideration among those debating the future of the college affordability: faculty and administrators, informed citizens, and students and their families. If we could harken back to the middle 1970s, a period before most institutions had developed a strategic approach to student aid, then I would agree fundamentally with the two moral boundaries these authors come up to the edge of defining: (1) states and federal government have a crucial role to play in promoting equal opportunity and (2) institutions need to adhere to standards of fairness as they use their scarce aid dollars to shape their student body and maintain financial viability.

Unfortunately, it has become more difficult for many colleges to adhere to the second moral boundary—fairness in aid administration—because the federal government has backed off its commitment to the first boundary, the basic standard of ensuring affordability for those with the greatest need. Adhering to a historical standard of admission without considering the financial implications of sticking to those standards can cause problems for all but the best endowed private colleges and universities or public institutions in states with well-funded grant programs. The alternatives, once available student aid dollars have been stretched to their limit, are to find more economical ways of delivering education or to reduce tuition and grants. Both of these alternatives also merit debate.

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Book Reviews

Choosing Colleges: How Social Class and Schools Structure Opportunity, by Patricia M. McDonough.
Albany: SUNY Press, 1997. 174 pp. \$50.00 (\$16.95)

REVIEWED BY DON HOSSLER, Indiana University, Bloomington

During the past twenty-five years, there has been a growing interest in both attracting and retaining undergraduate students. This is the result of an increased focus on the issues of equity and access to postsecondary education and the enlightened self-interest among college administrators in maintaining or increasing undergraduate enrollments. It is interesting to note that the majority of research on student attrition rests on studies conducted at individual institutions. Research on the phenomenon of what has come to be referred to as student college choice, however, includes both single institution studies and investigations that include large samples of high-school students considering a wide array of educational options. Until recently, however, large-scale studies have focused primarily on the development of postsecondary educational aspirations. As a result, researchers have lacked a rich understanding of how students learn about different colleges and universities and how they ultimately select a college or university to attend. Scholars, public and institutional policymakers, and high-school teachers and guidance personnel lacked an empirically derived understanding of how family background, student ability, peers, teachers and counselors, educational experiences, and community norms interact to influence the student college choice process.

Pat McDonough's book, *Choosing Colleges: How Social Class and Schools Structure Opportunity*, provides a rich and detailed look at the later stages of the college decision-making process. It represents one of the most comprehensive studies of this phase of the college choice process. Her method was thorough and complex. Focusing on twelve white female high-school seniors from four distinct high schools, McDonough interviewed the students, a best friend of each of the students, the students' parents, and a counselor from each high school. In total, there were 40 participants. In addition to an in-depth interview with each participant, she also had several phone conversations with the participants.

The study draws upon three lines of research: psychosocial, status attainment, and economic investigations of educational aspirations, plans, and college enrollment decisions. These perspectives inform the focus of her research

and her data analysis. Using inductive data reduction techniques, the author simultaneously examines the influence of family, social class, academic achievement, peers, the organizational culture of high schools, and guidance counseling (both school guidance counselors and private college counselors) on the postsecondary educational plans of the twelve seniors.

Four high schools provide the focus for this book. Paloma High School is a private all-girls school located in the Silicon Valley. Three subjects attended Paloma School. Another three girls who participated in this study attended Gates of Heaven High School, a private Catholic all-girls school located in a major American city. In addition, three participants were attending University High School at the time the research for this book was conducted. University High School is a public high school located in the Silicon Valley. The final three subjects attended Mission Cerritos High School, also a public high school located in the Silicon Valley.

McDonough is thorough in exploring the multiple influences of family background, peers, and finances upon the matriculation decisions of the twelve women in her study. Her findings are useful and reinforce previous research in this area. However, the unique contribution of this study is her focus on the impact of high schools and the role of high-school guidance counselors and private college counselors on the college enrollment decision. McDonough uses Bourdieu's concept of *habitus* (Bourdieu, 1977), which refers to a set of imbedded internalized outlooks or perspectives about the social construction of the world, to examine the influence of high schools upon students' choices of colleges to attend. In *Choosing Colleges*, she treats each of the four high schools as organizational entities that possess a distinctive *habitus* or culture. This provides an effective mechanism for organizing her findings.

McDonough demonstrates how individual high schools can develop a sense of the colleges and universities that are "acceptable" destinations for their students. She found, for example, great variation in the kinds of colleges students from the two public high schools, University and Mission Cerritos, considered attending. Students at University High School considered going to a mix of out-of-state private institutions and instate public institutions such as Boston College and Cal Poly Pomona. On the other hand, the students at Mission Cerritos primarily considered a mix of instate community colleges and California State University institutions. The *habitus* of each of these schools appeared to channel their graduates toward different types of postsecondary educational destinations.

Going to College also presents an intriguing perspective on the role of guidance counselors. Most of the reviews of research on student college choice (Hossler, Braxton, & Coopersmith, 1989; Paulsen, 1990) suggest that guidance counselors have little impact on the college decision-making process. McDonough finds great variation in the influence of guidance counselors. In schools where the student to counselor ratio is low and/or college counseling is given more attention, or when families can afford to hire private college counselors, counselors have a strong impact on the colleges to which students apply and the institutions they attend. Given the trend toward ever higher ratios of students to guidance counselors, this finding should be of concern to all who care about educational and social equity.

McDonough's focus on the organizational culture of high schools and guid-

ance counselors is an important contribution to our understanding of the phenomenon of student college choice. Her work raises important equity questions. Pascarella and Terenzini (1991) have carefully documented the benefits of living on campus and graduating from a four-year college or university. Although research on the long-term benefits of attending more selective colleges and universities is mixed, Pascarella and Terenzini note that some studies point to a lifetime of advantages that accrue to students who graduate from elite institutions. *Going to College* suggests that high-school cultures and the availability of knowledgeable and accessible guidance counselors result in differential lifetime advantages. In addition, McDonough's work extends our understanding of the factors that influence students' college matriculation decisions. *Going to College* may well be the best piece of scholarship to be published on student college choice in recent years. It is well written and accessible to a wide range of readers. It should be of interest to public policymakers, educational policymakers, and researchers.

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Service-Learning: Applications from the Research,
edited by Alan S. Waterman. NJ: Lawrence Erlbaum,
1997. 192 pp. \$45.00 (\$22.50)

REVIEWED BY SUSAN R. JONES, The Ohio State University

Renewed scholarly interest in the research and practice of service-learning and community service programs has produced a number of publications focusing on this area of inquiry. However, until the publication of *Service-Learning: Applications from the Research*, there has not been a text that emphasizes and describes the body of research within which the inquiry area of service-learning firmly resides. Service-learning has been defined by rich historical traditions, strong theoretical frameworks, and principles of good practice and exemplary

programs. Less prevalent in the literature is the research base that grounds current practice and informs future inquiry and program implementation. As noted in the foreword of this book, "If schools are to become laboratories of democracy and entrepreneurship, and if students are to become engaged as partners in renewal of their communities, a research case must be made for service-learning" (p. ix). By bringing together the work of those scholars who are conducting the research in service-learning, *Service -Learning: Applications from the Research* does much to make this case.

The chapters in this edited volume originally were papers presented at the 1995 National Service-Learning Conference sponsored by the National Youth Leadership Council (NYLC). Two central objectives are identified for the text: (1) a review and evaluation of the empirical research literature on methodologies for assessing the impact of service-learning programs, significant characteristics of school-based programs, and aspects of community contexts that influence the implementation of service-learning programs, and (2) the development of recommendations that emerge from the review of the research that may influence the future evolution of service-learning programs (p. xi). The book is organized into three sections, which focus on (1) methodologies for the study of service-learning, (2) the research on elements of effective service-learning programs, and (3) the research on specific contexts for service-learning. These three sections are framed in an introductory chapter and summarized in a final chapter, which creates a well-organized text with chapters that may be read consecutively or independently.

The introductory chapter previews the subsequent chapters by defining service-learning and providing an overview of the historical roots, benefits of involvement, range of service-learning activities, and role of research. Waterman notes that "it is the intention of the contributors to this volume to provide the foundation for the improvement of practice by identifying potential applications from the body of existing service-learning research" (p. 9).

Part 1 includes three chapters that focus on particular methodologies for the study of service-learning. Robert Serow, in Chapter 2, introduces a model for holistic assessment as most appropriate for the study of service-learning, incorporating both quantitative and qualitative approaches. An overview of several studies characteristic of the holistic approach is presented to illustrate the challenges of assessing service-learning as well as the benefits of such an approach. Chapters 3 and 4 focus on what is known about service-learning from qualitative and quantitative research. Describing the results of studies from the fields of career education, school-to-work, and experiential learning, Robert Shumer illuminates the potential of qualitative research to enhance understanding about the process of service-learning. Data from a large-scale quantitative study of 20 service-learning programs for 6th- through 12th-grade youth are presented in Chapter 4 by Dale Blyth, Rebecca Saito, and Thomas Berkas. The findings of the study are presented along with implications for practitioners.

Part 2 includes three chapters that focus on the research on particular elements of effective service-learning programs. Janet Eyler and Dwight Giles, Jr., in Chapter 5, review the literature that informs an understanding of the program characteristics leading to effective service-learning for students. Specifically, they draw from the literature and research on the principles of good practice, experiential learning theory, and student development outcomes to shape rec-

ommendations for program planning and implementation leading to quality student experiences in service-learning. In Chapter 6, Rahima Wade focuses specifically on teachers engaged in service-learning by examining teacher motivations, characteristics, experiences, and the implications for strengthening service-learning programs in the schools. In Chapter 7, Alan Waterman examines the role of student characteristics in service-learning by examining the research findings on student motivations, personal characteristics associated with level of involvement in service, and characteristics leading to sustained commitment.

Part 3 includes two chapters that explore the role played by differing contexts for service-learning. In chapter 8, Bruce A. Miller describes the work of the Northwest Regional Educational Laboratory, utilizing the rural setting as an important context for developing community-school collaborations and building social capital. In Chapter 9, Novella Keith examines urban settings as a context and explores the contributions service-learning can make to improving urban education, including the areas of pedagogy, curriculum, and community building. A particular contribution of this chapter is a discussion about engaged learning and culturally relevant pedagogy in urban education.

The final chapter of this volume, written by Richard Bradley, effectively evaluates and synthesizes the research findings highlighted in earlier chapters. The chapter is divided into sections, each of which focuses on the research questions addressed previously, summarizes the findings of the research in that area, and then poses additional evaluation questions to be explored. This chapter not only summarizes what we know about service-learning but also provides ample suggestions for future research and evaluation.

This book is the first text of its kind to present all we now know from the research on service-learning in an accessible and organized way. As such it makes a major contribution to the burgeoning literature on this subject and provides a strong research foundation for those designing service-learning programs as well as for those engaged in research. The chapters in the text taken together also reinforce the importance of connecting research with practice, each informed and strengthened by the other. The practice of service-learning has been present for some time, framed by the work of John Dewey and others; the research on service-learning, however is relatively new and has much to offer to continued practice and future research. The book is further strengthened by the explicit links made from research to practice and the emphasis on implications for practice in every chapter.

As a text that is focused primarily on the research on service-learning, it is bound and limited by the research conducted to date. Though the theory and principles of good practice for service-learning emphasize the reciprocal nature of partnerships and collaborations between schools, students, and the community, the reality is that we know very little about the effects of service-learning on the community, on community agencies, or on clients served. The scope of this text reinforces the disconnect between rhetoric and reality. Despite the fact that the community is the site for service-learning to take place, research has not focused on outcomes, benefits, or variables related to actually meeting community needs. Research, then, has the same tendency to tilt attention in the direction of benefits to students and schools.

Service-Learning: Applications from the Research will be a useful text for all

who are engaged in the service-learning enterprise. It could serve effectively as a text for undergraduate and graduate classes preparing professionals to serve their communities as teachers, administrators, and as engaged citizens. Any "student" of service-learning, as teacher, community service programs director, faculty, educational administrator, or researcher will find this text valuable with its attention to methodological issues, compendium of past research on service-learning, and implications for practice based upon research findings. For those needing to provide rationale, justifications, and testimony to the benefits and effects of service-learning, this book will serve as an invaluable reference. In fact, it is essential that this text be updated annually with findings from current research on service-learning to best inform practice and further research. The foreword to the book indicates such a plan for a *Studies in Service-Learning* series under the sponsorship of the NYLC.

The present volume is a well-organized and strategically designed text that serves both practitioners and researchers well. Chapters may be read consecutively or independently, for each chapter offers a description of the substantive research findings for a particular area of interest related to service-learning as well as implications for practice. The book, by explicitly connecting theory-to-practice-to-research, emphasizes the value of each and the integral relationship each has to the other.

Persistence in Science of High-Ability Minority Students

Results of a Longitudinal Study

Background

Concern over the underrepresentation of minorities in natural sciences, mathematics, and engineering (S/E) led to this longitudinal study of high-ability minority students. Although there is presently no shortage of scientists or engineers in the United States, failure to support talented minority students is a disservice to those students. Capable minorities deserve equal access to S/E professions, and our entire society benefits when minorities can serve as role models for younger members of their racial/ethnic groups.

The study was restricted to students with relatively high math test scores because, it was assumed, most low-scoring students would lack the fundamental skills required of science students, and the bulk of the sample would either fail to enroll in college or would drop out or change majors during the first year. More important to the study were students who were judged to be academically capable of becoming scientists or engineers but who for some reason chose to abandon their fields before graduating from college. Identifying the reasons why academically capable minorities either persist or leave S/E was the focus of the study. Furthermore, a comprehensive model was developed to estimate the relative importance of each factor on persistence.

NAEP survey data show that from the fourth grade through the twelfth grade the percentage of Black children is as high as the percentage of White or Hispanic children who enjoy mathematics (National Center for Education Statistics, 1991). Furthermore, admissions credentials (such as SAT and GRE scores) of minorities (especially Blacks)

Jerilee Grandy completed this study as a research scientist at the Educational Testing Service, Princeton, New Jersey, and is now a consultant for ETS and other organizations.

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have been increasing in recent years. Nevertheless, the number who actually earn bachelor's degrees in S/E and the number who attend graduate school are still exceedingly small.

Between 1977 and 1993 the percentage of S/E bachelor's degrees awarded to African Americans remained essentially unchanged at 6%, and the percentage of PhDs in S/E awarded to African Americans remained at less than 2% during that period (National Science Board, 1996). Just to illustrate how small the numbers are, only 52 Black U.S. citizens earned PhDs in physical sciences in 1994 (Simmons & Thurgood, 1995). The 1990 American Chemical Society Salary Survey revealed that African American chemists represented less than 2% of their membership (E. Smith, 1991); the Institute for Electrical and Electronic Engineers (IEEE) reported that in 1990 only 1% of their members were Black (IEEE, 1991).

A considerable body of prior research suggests that parents' education has little, if any, direct effect on success in S/E (e.g., Kohen, Nertel, & Kamas, 1978; Mow & Nettles, 1990; Tinto, 1987). More important are the math/science skills students acquire in elementary and secondary school—skills that provide an essential foundation for their collegiate studies.

In addition to academic preparation, the literature supports the importance of noncognitive variables in academic success. Tracey and Sedlacek (1984, 1985, & 1987) have found repeatedly that noncognitive factors, such as self-concept and an understanding of racism and an ability to cope with it, play more critical roles in persistence than do cognitive factors. Racism has been found to be one of the primary explanatory variables accounting for differences in the academic performance of White and minority students (Loo & Rolison, 1986; Suen, 1983). Discrimination impedes both the cognitive and affective development of minority students (Fleming, 1984; Hurtado, 1992 & 1994) and results in the students' isolation from faculty, other students, and campus organizations (Smedley, Myers, & Harrell, 1993; Smith, 1989 & 1992). Nora and Cabrera (1996) found that perceptions of prejudice-discrimination negatively affected minority students' cognitive and affective development.

At the time students are exploring courses and careers in S/E, they are involved in a variety of activities and may be considering other fields of endeavor. Competing with mathematics and science courses are other academic interests as well as social life, community service, music, sports, and other activities. Some investigators have even found greater social development to be associated with leaving the sciences (Sax, 1994).

Students' values and their perceptions of the compatibility between

their values and chosen career affect persistence toward that career. Expectancy-value theory would predict that students who value scientific achievement and who expect to be successful in science will persist to a greater extent than those who place a low value on achieving in science or who doubt their ability to succeed (Atkinson, 1964; Feather, 1988; Sullins, Hernandez, Fuller, & Tashiro, 1995).

Research on college seniors applying to graduate school has found that those planning to leave S/E for a different graduate field after earning a bachelor's degree in S/E were more likely to value making a contribution to society than were the students planning to continue in S/E (Grandy, 1992). In another study, older GRE examinees who had degrees in S/E and who were returning to school to earn a graduate degree showed a similar pattern—making a contribution to society was more important to those who were leaving S/E than it was to examinees planning to advance their studies in S/E (Grandy, 1998).

To some extent, the desire to make a contribution to society may be seen as part of a broader interest in humanity and interpersonal relations. Astin (1993) found student interest in making a theoretical contribution to science to be negatively correlated with number of history courses and writing courses taken, hours spent socializing, and hours spent attending religious services. All of these activities suggest stronger interests in people, culture, and verbal communication than in science.

In addition to student values and academic skills, environmental variables can be expected to play a role in student persistence. A number of researchers have found that among students who plan to earn bachelor's degrees, those who initially attend two-year colleges are less likely to attain that goal. For example, Astin (1982) found that for each ethnic group, the proportion of students who completed bachelor's degrees within nine years was two to three times higher among students who initially attended four-year institutions than among those who initially entered two-year colleges. Furthermore, the very large difference in retention rates of Black students could not be totally explained by the relatively poor academic preparation of those who attended two-year colleges. Although Astin's work was not restricted to science students, we might expect the same pattern to hold for science and other academic fields.

The purpose of the current study was to construct a comprehensive model to investigate why some high-ability minority students follow through with their plans to become scientists and engineers, while others with the same plans do not. By using a structural equation model with latent variables in the final analysis, the direct and indirect effects of all variables on persistence could be estimated.

Under a grant from the National Science Foundation, this study was

begun and directed by Hilton in 1986; two interim reports contain descriptive statistical findings and results of multiple regression analyses (Hilton, Hsia, Solorzano, & Burton, 1989; Hilton, Hsia, Cheng, & Miller, 1995). A full report of the path analysis is also available (Grandy, 1995a).

Hilton and his colleagues began this project by sampling high-ability students who took the Scholastic Aptitude Test (SAT) in 1985 and following the progress of those students for five years. Students had to have scored at least 550 on the SAT mathematics test section (which placed them among the top 29% of the SAT population), and they had to have indicated that they planned to major in S/E in college. S/E was defined to include agriculture, architecture, biological sciences, computer sciences, engineering, medical and dental professions, mathematics, and physical sciences. Social sciences and psychology were not included.¹ The initial sample contained all qualifying students from four underrepresented minority groups: 354 American Indian, 2,666 Black, 1,488 Mexican American, and 690 Puerto Rican students. To this group were added random samples of 688 Asian American and 404 White students satisfying the same selection criteria.

Information from the SAT files contained not only test scores but also data from the Student Descriptive Questionnaire (SDQ) completed by most students who register to take the SAT. Included among these data were self-reported grades, self-ratings of various abilities, family background, and high-school activities.

In the spring and summer of 1987, two years after these students graduated from high school, Hilton and colleagues sent a lengthy questionnaire, entitled the Postsecondary Experience Survey (PES), to all students in the sample and used extensive follow-up procedures to encourage the return of questionnaires. The PES asked about high-school experiences, factors influencing career plans, current educational status, and life values. Fifty-five percent of the total sample returned the PES. The largest response came from White students (71%); the lowest response was from Asian Americans (47%). The parents of all nonrespondents were sent a short postcard questionnaire to learn the status of their students. Postcard responses from parents increased the overall response to 73%, but because the information on the postcard was limited to status in 1987, postgraduation information that might explain student status was available only on those who returned the PES.

Data were then collected at a third point in time—in 1990—five years after high school. An attempt was made to contact by telephone all students who had given permission to do so. The remainder were sent a short questionnaire. The total number of students whose outcome status could be determined from the various combinations of survey responses

was 3,840 (64% of the original sample). SAT scores and demographic characteristics of the nonrespondents indicated that they had lower scores and less educated parents than did the respondents, as usually is the case in such surveys. The reader is also reminded that the sample members had to have SAT mathematics scores of at least 550 and show an interest in S/E majors. Thus the responding sample was not a random sample of college students but a highly selected sample designed for the purpose of tracking the most capable minority students.

Path Analysis

Method

A recursive causal model based on the available data was developed and tested using LISREL 8, a structural equation modeling approach formulated by Jöreskog and Sörbom (1993a). The general approach to model development consisted of first laying out a time line showing the path of students from one point in time to the next, as shown below.



Even though data were collected at three points in time (marked by dates and bullets), the data actually referred to at least five different times. Pre-high school variables, such as gender and socioeconomic status (SES), came first. Those variables could affect everything thereafter. High-school experiences, plans, test scores, and grades came next, and they could affect everything thereafter. Early college activities and experiences came next, and they could affect all information collected in the PES survey, such as values, opinions, and early college grades; they could also affect persistence directly. Finally, grades, values, and opinions as stated in the PES could affect outcome in 1990: either students were in S/E or they were not. In this recursive model, each variable could be affected by all earlier variables, and each could affect all later variables.

The next step was to define the variables to include in the model and to ensure that they were placed correctly on the time line. The PRELIS preprocessing program (Jöreskog & Sörbom, 1988, 1993b) screened the input data, normalized it, and produced product-moment correlation coefficients for continuous variables (such as SAT scores), polychoric correlations between ordinal variables (such as questionnaire responses on 5-point Likert scales), and polyserial correlations between ordinal and continuous variables. The resulting correlation matrix was input to the LISREL program.

Sample

The analysis reported here is based solely on those minority students who enrolled in college, completed the PES, and provided outcome-status information five years after high school. The sample was restricted in this way so that nearly complete data would be available on everyone. The sample included students who persisted in S/E as well as those who switched majors or dropped out of college after the sophomore year.

The comparison sample of White students was excluded from all analyses because many of the critical PES questions were directed toward minorities only. Students for whom there were no early college data or outcome data were also excluded. Those who omitted an occasional question, as nearly all students did, were not excluded. The number of students for whom essentially all data were available totalled 2,557. Breakdowns by ethnic group and gender are shown in Table 1.

Fifty-eight percent of the male sample were either studying or working in S/E at the time of the final follow-up survey in 1990. Only 48% of the female sample persisted to that status in 1990. However, there was no significant difference among ethnic groups, for either gender, in the percentage who persisted in S/E.

Variables

The criterion of persistence as of the 1990 status survey was defined very simply. Students who were working full-time or part-time in S/E or who were studying S/E full-time or part-time (either undergraduate or graduate) were defined as having persisted. Anyone who had earned a degree in S/E but was employed outside of S/E was classified as not persisting, even though that person might not have chosen to leave S/E. In other words, if they were "in" S/E in any way in 1990, they were defined as having persisted. This outcome status variable was scored "0" or "1."

Because there were hundreds of variables in the data base, only those that correlated at least 0.10 with persistence were considered for inclusion in the model. SAT mathematics scores correlated 0.15 with persis-

TABLE 1
Sample Size by Gender and Ethnic Group

Ethnic Group	Number Male	Number Female	TOTAL
American Indian	108	38	146
African American	609	505	1,114
Mexican American	495	194	689
Asian American	176	103	279
Puerto Rican	232	97	329
TOTAL	1,620	937	2,557

tence; the correlation probably would have been much higher if the study had not been restricted to students scoring 550 or higher. There was no correlation between SAT verbal scores and persistence, so verbal scores were not included in the model. Gender (being male) correlated 0.16 with persistence. No demographic or other precollege variable correlated higher than 0.20 with persistence. On the other hand, many questionnaire items collected at the college sophomore level correlated quite well with persistence three years later. These included statements of commitment to their field ($r = 0.69$), enjoyment of science ($r = 0.65$), and importance of discovering new frontiers in science and technology ($r = 0.49$).

The path analysis contained four measured variables and eight latent variables. The measured variables were gender, type of college attended (2-year or 4-year college/university), self-reported science grade average at the end of the sophomore year of college, and outcome status five years after high school (either in S/E or not). Latent variables were developed individually, tested using LISREL, and then assembled into more complex models. Some variables were discarded because of multicollinearity problems.

Socioeconomic status (SES) was a latent variable composed of three variables from the SDQ. These variables were father's education, mother's education, and family income.

Math/science achievement consisted of the most recent self-reported high-school grades in physical sciences, mathematics, and biological sciences, as well as the mathematics score on the SAT.

Social development in high school was composed of six questions from the SDQ. Three of the questions were self-ratings on leadership ability, ability in spoken expression, and getting along with others. The other three questions concerned level of participation and leadership in clubs, participation in student government, and level of participation and leadership in community or church activities.

Minority support early in college consisted of three questions from the PES: the extent to which they had minority or female role models and advisors, the extent to which they had advice and support from advanced students of their own ethnic group, and the extent to which they had a dedicated minority relations staff.

Science ambition early in college also consisted of three questions from the PES: the importance of making practical scientific or technological contributions, the importance of discovering new frontiers in science or technology, and the importance of contributing to scientific theory.

Importance of security was defined by three PES questions asking the importance of being able to find steady work, the importance of job se-

curity and permanence, and the importance of being successful in their line of work.

Importance of service consisted of four PES questions: the importance of serving the public interest, working to correct social or economic inequalities, being an inspiring teacher or role model, and being a leader in the community.

Finally, the variable entitled *commitment* consisted of two questions: the extent to which they had found an S/E field to which they could make a commitment, and the extent to which they enjoyed their chosen major field.

Results

Figure 1 shows the arrangement of the four measured variables and eight latent variables along the time line. A maximum likelihood (MLH) solution was generated, using the input matrix of correlations discussed earlier.² The best-fitting and largest model accounted for 61% of the variance in outcome. The standardized root-mean-square residual (RMR) was 0.065. The goodness-of-fit index (GFI) was 0.89. The pattern of residuals did not contain any large residual.

Table 2 lists the eight latent variables and their standardized factor loadings. Intercorrelations (Φ matrix) are shown in Table 3.

Effects on math/science achievement in high school. The first struc-

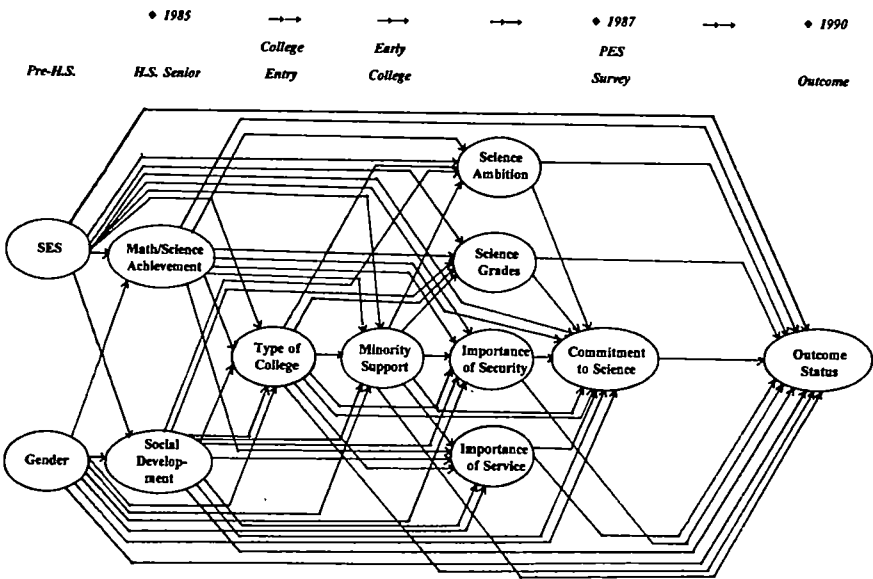


FIG. 1. Hypothesized Causal Model

TABLE 2

Definition of Each Latent Variable and Standardized Factor Loading (λ) Associated with Each Measured Variable

Abbrev.	Latent Variable Description	Abbrev.	Measured Variable Description	λ
Ses	Socioeconomic status	FATHEDUC	Father's education	0.89
		MOTHEDEC	Mother's education	0.74
		INCOME	Family income	0.61
MSciAch	Math & science achievement	PHYSGRD	Latest (high-school) grade in physical sciences	0.80
		MATHGRD	Latest (high-school) grade in math	0.68
		BIOGRD	Latest (high-school) grade in biological sciences	0.66
		SATM	SAT mathematics score	0.37
Social	Interpersonal/Leadership achievements	LEADABIL	Self-rating, leadership ability	0.88
		SPEAKABL	Self-rating, ability in spoken expression	0.69
		OTHRABIL	Self-rating, getting along with others	0.66
		CLUBS	Level of partic. & leadership in clubs	0.48
		STUDGOVT	Participation in student government	0.48
		COMMSERV	Level of partic. & leadership in community/church	0.34
ColMin	Minority support early in college	Q19L	Minority or female role models and advisors	0.83
		Q19H	Advice & support from advanced students in same ethnic group	0.76
		Q19Q	Dedicated minority relations staff	0.72
SciAmbit	Science ambition early in college	Q21M	Importance of making practical scientific or technological contributions	0.94
		Q21Q	Importance of discovering new frontiers in science or technology	0.92
		Q21N	Importance of contributing to scientific theory	0.91
Security	Importance of security & success	Q21E	Importance of being able to find steady work/	0.83
		Q22C	Importance of job security and permanence	0.81
		Q21A	Importance of being successful in own line of work	0.50
Service	Importance of being of service	Q21R	Importance of serving the public interest	0.72
		Q21J	Importance of working to correct social or economic inequalities	0.70
		Q21P	Importance of being an inspiring teacher or role model	0.63
		Q21F	Importance of being a leader in my community	0.63
Commit	Enjoyment of science and making a commitment early in college	Q19S	Found MSE field to which I could make commitment	0.97
		Q19R	Enjoyment of chosen major field	0.92

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Gender	1.00											
(2) SES	0.10	1.00										
(3) Math/sci achievement	0.07	0.06	1.00									
(4) Social achievement	0.15	0.15	0.02	1.00								
(5) College type	0.09	0.22	0.33	0.12	1.00							
(6) College minority suppt.	0.10	-0.07	-0.01	0.12	0.20	1.00						
(7) Science ambition	-0.17	-0.05	0.16	0.03	0.07	0.31	1.00					
(8) College science grades	0.00	0.06	0.41	-0.06	-0.05	0.03	0.09	1.00				
(9) Security	-0.01	-0.10	-0.06	-0.02	0.00	0.26	0.08	-0.01	1.00			
(10) Service	0.13	-0.07	0.06	0.30	0.16	0.34	0.10	0.00	0.07	1.00		
(11) Commitment	-0.14	-0.01	0.21	0.01	0.02	0.51	0.70	0.24	0.16	-0.02	1.00	
(12) Outcome	-0.17	0.02	0.21	-0.08	0.17	0.30	0.54	0.24	0.12	-0.11	0.74	1.00

tural equation examined the effects of SES and gender on math/science achievement in high school. Table 4 shows that although SES and gender both had statistically significant effects on math/science achievement, they explained less than 1% of the variance in math/science achievement. Annual statistics based on the entire SAT population show that higher SES students and females do earn higher math/science grades than do lower SES and male students, but males earn higher SAT math scores than females do (College Board, 1995). When grades and test scores (which are positively correlated with each other) are combined into a single achievement factor, as they are in this analysis, gender and SES effects are essentially negligible.

Effects on social development. Social development, which included leadership experience and participation in various types of organizations, was stronger among females and students from higher SES families. Table 5 indicates that gender and SES had approximately equal effects on social development but together accounted for only 4% of the variance in social development.

Effects on type of college attended. Table 6 shows that the strongest direct effect on type of college attended was math/science achievement in high school, with students earning the highest grades and test scores being more likely to attend four-year colleges and universities. SES also had a direct effect, with students from better educated families with higher incomes also being more likely to attend these institutions. To a very small extent, having greater social skills and leadership experience

TABLE 4
Direct, Indirect, and Total Effects on Math/Science Achievement in High School

Construct:	Direct	Indirect	Total
1. Socioeconomic status (SES)	0.06*	—	0.06*
2. Gender	0.06*	—	0.06*
3. Math/science achievement in high school	—	—	—
4. Social development in high school	—	—	—
5. Type of college attended	—	—	—
6. Minority support, reported sophomore year	—	—	—
7. Science ambition, reported sophomore year	—	—	—
8. Science grades, reported sophomore year	—	—	—
9. Importance of security, reported sophomore year	—	—	—
10. Importance of performing a service, reported sophomore year	—	—	—
11. Commitment to science, reported sophomore year	—	—	—
12. Outcome status three years later	—	—	—

$R^2 = 0.0076$

* $p < 0.05$. ** $p < 0.01$.

TABLE 5
Direct, Indirect, and Total Effects on Social Development in High School

Construct:	Direct	Indirect	Total
1. Socioeconomic status (SES)	0.14**	—	0.14**
2. Gender	0.13**	—	0.13**
3. Math/science achievement in high school	—	—	—
4. Social development in high school	—	—	—
5. Type of college attended	—	—	—
6. Minority support, reported sophomore year	—	—	—
7. Science ambition, reported sophomore year	—	—	—
8. Science grades, reported sophomore year	—	—	—
9. Importance of security, reported sophomore year	—	—	—
10. Importance of performing a service, reported sophomore year	—	—	—
11. Commitment to science, reported sophomore year	—	—	—
12. Outcome status three years later	—	—	—
$R^2 = 0.041$			

* $p < 0.05$. ** $p < 0.01$.

TABLE 6
Direct, Indirect, and Total Effects on Type of College Attended

Construct:	Direct	Indirect	Total
1. Socioeconomic status (SES)	0.19**	0.03**	0.21**
2. Gender	0.03	0.03**	0.06**
3. Math/science achievement in high school	0.31**	—	0.31**
4. Social development in high school	0.08**	—	0.08**
5. Type of college attended	—	—	—
6. Minority support, reported sophomore year	—	—	—
7. Science ambition, reported sophomore year	—	—	—
8. Science grades, reported sophomore year	—	—	—
9. Importance of security, reported sophomore year	—	—	—
10. Importance of performing a service, reported sophomore year	—	—	—
11. Commitment to science, reported sophomore year	—	—	—
12. Outcome status three years later	—	—	—
$R^2 = 0.16$			

* $p < 0.05$. ** $p < 0.01$.

improved students' chances of attending four-year colleges and universities. Indirect effects of gender and SES were extremely small.

Effects on availability of minority support in college. Only 8% of the variance in minority support could be explained by the earlier variables in the model. Table 7 shows that the best predictor was the type of college attended. Students in four-year colleges and universities showed evidence of receiving slightly more minority support than did students in two-year colleges.

TABLE 7

Direct, Indirect, and Total Effects on Minority Support, as Reported in the College Sophomore Year

Construct:	Direct	Indirect	Total
1. Socio-economic status (SES)	-0.14**	0.06**	-0.08**
2. Gender	0.09**	0.02**	0.11**
3. Math/science achievement in high school	-0.09**	0.08**	-0.02
4. Social development in high school	0.10**	0.02**	0.12**
5. Type of college attended	0.24**	—	0.24**
6. Minority support, reported sophomore year	—	—	—
7. Science ambition, reported sophomore year	—	—	—
8. Science grades, reported sophomore year	—	—	—
9. Importance of security, reported sophomore year	—	—	—
10. Importance of performing a service, reported sophomore year	—	—	—
11. Commitment to science, reported sophomore year	—	—	—
12. Outcome status three years later	—	—	—
$R^2 = 0.082$			

* $p < 0.05$. ** $p < 0.01$.

Social development in high school also had a very small direct effect on minority support in college, possibly indicating an underlying extraversion trait. In other words, students who seek out more social contacts in high school may also seek out minority support systems in college.

Being female had small direct and indirect effects on obtaining minority support in college. On average, females were slightly more social than males, had slightly higher math/science grades, and were somewhat more likely to attend a four-year college or university. All of these conditions contributed, directly and indirectly, to their receiving very slightly more support as minorities in college.

Lower SES students received slightly more minority support in college, possibly because their parents had less education and could offer less academic guidance. Their need of a support system may have been somewhat greater. That would account for the negative direct effect of SES on minority support. This effect was mitigated somewhat, however, by the indirect effect of SES, which was positive because being from a higher SES family increased a student's chances of having higher grades which, in turn, tended to reduce the student's need of a support system. Again, the model showed all of these effects to be very small.

Effects on science ambition in college. Table 8 shows that the most important variable affecting science ambition was minority support, with 12% of the variance in science ambition being explained by that factor alone. Those students who indicated that they had minority role models in college, received advice and support from advanced students

TABLE 8

Direct, Indirect, and Total Effects on Science Ambition, as Reported in the College Sophomore Year

Construct:	Direct	Indirect	Total
1. Socioeconomic status (SES)	-0.01	-0.02*	-0.03
2. Gender	-0.22**	0.05**	-0.17**
3. Math/science achievement in high school	0.19**	-0.02	0.17**
4. Social development in high school	0.02	0.04**	0.06*
5. Type of college attended	-0.05*	0.08**	0.03
6. Minority support, reported sophomore year	0.34**	—	0.34**
7. Science ambition, reported sophomore year	—	—	—
8. Science grades, reported sophomore year	—	—	—
9. Importance of security, reported sophomore year	—	—	—
10. Importance of performing a service, reported sophomore year	—	—	—
11. Commitment to science, reported sophomore year	—	—	—
12. Outcome status three years later	—	—	—
$R^2 = 0.17$			

* $p < 0.05$. ** $p < 0.01$.

of their own ethnic group, and had a dedicated minority relations staff were somewhat more likely to feel that it was important to them to make scientific or technological contributions, to discover new frontiers in science or technology, or to contribute to basic scientific theory.

Math/science achievement in high school had a direct positive effect on science ambition in college. The type of college attended had essentially no effect on science ambition.

Gender had some effect on science ambition. Making the kinds of contributions and discoveries that scientists and engineers make was somewhat less important to female than male students. In fact, according to this model, being female had a direct negative effect on science ambition. It is interesting to note that although females earned higher math/science grades in high school than did males, were somewhat more likely to attend four-year colleges and universities, were somewhat more likely to take advantage of minority support systems—all of which contributed to greater science ambition—they still had less science ambition by the end of the sophomore year than did males.

Effects on self-reported math/science grades in college. Table 9 shows that the best predictor of grades in college were grades in high school. Because the grades were self-reported, we might expect any tendency to inflate one report to be correlated with a tendency to inflate the other, resulting in an "effect" that includes a halo, or correlated measurement error. Nevertheless, underlying math/science ability is undoubtedly reflected by both of these variables.

The type of college attended had the second largest effect, almost en-

TABLE 9

Direct, Indirect, and Total Effects on Science Grades, as Reported in the College Sophomore Year

Construct:	Direct	Indirect	Total
1. Socioeconomic status (SES)	0.10**	-0.04**	0.06*
2. Gender	-0.02	0.02	-0.01
3. Math/science achievement in high school	0.49**	-0.08**	0.41**
4. Social development in high school	-0.06**	-0.01	-0.07**
5. Type of college attended	-0.24**	0.03**	-0.22**
6. Minority support, reported sophomore year	0.11**	—	0.11**
7. Science ambition, reported sophomore year	—	—	—
8. Science grades, reported sophomore year	—	—	—
9. Importance of security, reported sophomore year	—	—	—
10. Importance of performing a service, reported sophomore year	—	—	—
11. Commitment to science, reported sophomore year	—	—	—
12. Outcome status three years later	—	—	—

 $R^2 = 0.22$ * $p < 0.05$. ** $p < 0.01$.

tirely a direct effect, on reported math/science grades. Students attending two-year colleges reported somewhat higher grades than did students in four-year colleges or universities.

Higher SES students tended to achieve very slightly higher college grades, just as they had in high school, though the small indirect effect of SES operated in reverse because higher SES students were more likely to attend four-year colleges that gave somewhat lower grades.

Finally, the availability of a minority support system had a small positive effect on math/science grades.

Effects on the importance of job security and success. Table 10 shows that the importance of job security and success was not well predicted except by the availability of minority support systems in college. Students from lower SES families tended to value security and success slightly more than students from high SES families.

Effects on the importance of performing a service. Table 11 shows that 21% of the variance in this factor could be explained by the model. Social development in high school, which included leadership and participation in community service activities, along with minority support systems in college had the strongest effects on the importance of being a leader or performing a service as reported during the sophomore year of college.

SES had a small direct negative effect, meaning that students from lower SES backgrounds placed a slightly greater value on having work that performed a service. Females, slightly more than males, also valued leadership and being of service. The gender effect was both direct and indirect, but quite small.

TABLE 10

Direct, Indirect, and Total Effects on the Importance of Security, as Reported in the College Sophomore Year

Construct:	Direct	Indirect	Total
1. Socioeconomic status (SES)	-0.06*	-0.03**	-0.10**
2. Gender	-0.02	0.02*	0.00
3. Math/science achievement in high school	-0.04	-0.01	-0.05*
4. Social development in high school	-0.04	0.03**	-0.01
5. Type of college attended	-0.02	0.06**	0.04
6. Minority support, reported sophomore year	0.26**	—	0.26**
7. Science ambition, reported sophomore year	—	—	—
8. Science grades, reported sophomore year	—	—	—
9. Importance of security, reported sophomore year	—	—	—
10. Importance of performing a service, reported sophomore year	—	—	—
11. Commitment to science, reported sophomore year	—	—	—
12. Outcome status three years later	—	—	—
$R^2 = 0.076$			

* $p < 0.05$. ** $p < 0.01$.

TABLE 11

Direct, Indirect, and Total Effects on the Importance of Performing a Service, as Reported in the College Sophomore Year

Construct:	Direct	Indirect	Total
1. Socioeconomic status (SES)	-0.12**	0.04**	-0.08**
2. Gender	0.07**	0.07**	0.14**
3. Math/science achievement in high school	0.03	0.02	0.06*
4. Social development in high school	0.26**	0.04**	0.31**
5. Type of college attended	0.09**	0.07**	0.15**
6. Minority support, reported sophomore year	0.28**	—	0.28**
7. Science ambition, reported sophomore year	—	—	—
8. Science grades, reported sophomore year	—	—	—
9. Importance of security, reported sophomore year	—	—	—
10. Importance of performing a service, reported sophomore year	—	—	—
11. Commitment to science, reported sophomore year	—	—	—
12. Outcome status three years later	—	—	—
$R^2 = 0.21$			

* $p < 0.05$. ** $p < 0.01$.

The type of college attended also had small direct and indirect effects on the value of performing a service. Students who attended four-year colleges and universities were slightly more interested in work that performed a service than were students from two-year colleges. Part of the effect was indirect, namely, students attending four-year colleges were slightly more likely to have a minority support system, and the support system had a positive effect on their valuing leadership and service.

Effects on commitment to S/E. Table 12 shows that the largest effects on the decision to make a commitment to science in the sophomore year were the direct effect of science ambition and both the direct and indirect effects of minority support systems. Students who indicated that they had minority role models, advice and support from advanced students of their ethnic group, and a dedicated minority relations staff at their college were much more likely to make a commitment to S/E by their sophomore year. Not surprisingly, math/science achievement in high school showed both direct and indirect effects on commitment to S/E in college, though the effects were small. The most scientifically able students tended to be the ones who most enjoyed S/E, and because they more often attended four-year colleges and took advantage of minority support systems, their enthusiasm for science led them to make a strong commitment to an S/E career by their sophomore year.

A finding worth noting is that the importance of being a leader or role model or of serving the public interest had a direct negative effect on commitment to science. Students who wanted to be of service were slightly more likely to leave S/E than were students who placed less value on leadership or service.

The type of college attended had a small negative direct effect and very small positive indirect effect on commitment to science. We would expect the positive indirect effect because of the greater availability of minority support systems in four-year colleges and universities, which,

TABLE 12

Direct, Indirect, and Total Effects on Commitment to Science, as Reported in the College Sophomore Year

Construct:	Direct	Indirect	Total
1. Socioeconomic status (SES)	0.05**	-0.05*	0.01
2. Gender	-0.08**	-0.07**	-0.15**
3. Math/science achievement in high school	0.14**	0.08**	0.22**
4. Social development in high school	0.03*	0.01	0.03
5. Type of college attended	-0.12**	0.07**	-0.05*
6. Minority support, reported sophomore year	0.44**	0.15**	0.58**
7. Science ambition, reported sophomore year	0.55**	—	0.55**
8. Science grades, reported sophomore year	0.11**	—	0.11**
9. Importance of security, reported sophomore year	0.03	—	0.03
10. Importance of performing a service, reported sophomore year	-0.21**	—	-0.21**
11. Commitment to science, reported sophomore year	—	—	—
12. Outcome status three years later	—	—	—

$R^2 = 0.67$

* $p < 0.05$. ** $p < 0.01$.

in turn, served to encourage commitment to S/E. The small negative direct effect on commitment to S/E is not obvious.

Gender had very small direct and indirect effects on commitment. Males were more somewhat more likely to commit themselves to S/E than females were.

College science grades had a relatively minor effect on commitment. It is possible, of course, that students who were performing poorly in their S/E courses dropped out of college before the sophomore-year survey.

Effects on outcome status in 1990. Table 13 shows that 61% of the variance in outcome status five years after high school was explained by the model. The most significant finding was that commitment to S/E during the sophomore year of college was the best determinant of persistence three years later. Fifty-six percent of the variance in outcome status was explained by this factor alone.

Math/science achievement in high school as well as college science grades had an important indirect effect on persistence, as we might expect, but in this sample, these cognitive indicators were not as heavily weighted as the affective components of minority support, science ambition, and commitment. Recalling that only high-ability students were selected for this study, we would not expect to have enough variation in intellectual ability for that variation to make a large difference in success in S/E.

The importance of performing a service had a very small negative impact on persistence, as did social development in high school, which included both leadership and service activities.

TABLE 13

Direct, Indirect, and Total Effects on Outcome Status Five Years after High School

Construct:	Direct	Indirect	Total
1. Socioeconomic status (SES)	-0.02	0.06**	0.04
2. Gender	-0.04*	-0.14**	-0.17**
3. Math/science achievement in high school	-0.05*	0.28**	0.22**
4. Social development in high school	-0.06**	0.00	-0.06*
5. Type of college attended	0.23**	-0.10**	0.14**
6. Minority support, reported sophomore year	-0.12**	0.45**	0.33**
7. Science ambition, reported sophomore year	0.04	0.41**	0.45**
8. Science grades, reported sophomore year	0.09**	0.08**	0.18**
9. Importance of security, reported sophomore year	0.03	0.02	0.05**
10. Importance of performing a service, reported sophomore year	-0.07**	-0.15**	-0.23**
11. Commitment to science, reported sophomore year	0.75**	—	0.75**
12. Outcome status three years later	—	—	—
$R^2 = 0.61$			

* $p < 0.05$. ** $p < 0.01$.

The type of college attended had a moderately positive direct effect, with students in four-year colleges and universities being more likely to complete their studies in S/E.

Most of the small effect of gender on persistence in S/E was indirect and accounted for by the lesser degree of science ambition and the consequent lack of commitment to S/E expressed by females in the sophomore year.

Discussion of Prediction Variables

Socioeconomic status. The family backgrounds of minority students in this study covered a broad range. Some had parents with no high-school degree, and approximately one-fourth had a parent with a graduate or professional degree. This sample of students cannot, as a whole, be regarded as economically or educationally disadvantaged. On the other hand, because there was a considerable range of SES backgrounds, the small effect of SES on college performance and persistence cannot be attributed to a restricted range. Whether students had parents with PhDs or parents who had not completed high school had very little effect on their success in S/E. This finding is consistent with the views of other researchers (e.g., Kohen, Nertel, & Kamas, 1978; Mow & Nettles, 1990; Tinto, 1987).

Although students from lower SES families did have slightly lower test scores in high school and were somewhat less likely to attend four-year colleges or universities, their college experiences appeared to compensate for these early disadvantages. Of all the variables in the model, minority support in college appears to have had the greatest influence in overcoming the early disadvantages of a lower SES background.

Gender. As in the general population, fewer females than males persisted in S/E. Are there any events in this model, between high school and a point in time five years after high school, that might account for the greater loss of females than males from the S/E pipeline?

The model showed that math/science achievement in high school was *not* a factor in persistence (when math/science grades and SAT mathematics scores were both taken into account). Although females earned lower SAT mathematics scores, their self-reported grades in all courses, including physical sciences, were higher than the grades of males. The relatively higher grades and lower test scores of female students occur more generally in both the SAT and GRE data bases, and they even occur within field of study among GRE examinees (Clark & Grandy, 1984; Grandy, 1995b).

Gender was uncorrelated with self-reported grades in S/E in college. Therefore, it was apparently not grades that kept females from persisting in S/E.

Social development, which included various activities in high school, might have distracted students from their S/E goals, or students might already have had strong social interests and abilities that drew them into social activities, toward social and humanitarian careers, and away from S/E. Because female students participated more in these social and leadership experiences than did males, the slightly greater social emphasis in their lives may have had a very slightly negative effect on persistence.

Females, slightly more than males, attended four-year colleges and universities. Students attending four-year colleges and universities were more likely to persist in S/E. Therefore, the type of college attended should actually have enhanced the female student's chances of persisting.

According to the model, the primary college variables that explained the lower persistence rate of female students were science ambition and willingness to make a commitment to S/E. Whatever reasons female students may have had for leaving S/E, they were apparently not intellectual limitations but reasons based on what they wanted to do with their lives.

Math/science achievement in high school. This factor correlated only 0.21 with student outcome in 1990. Recalling that the sample consisted of minority students scoring 550 or higher on SAT mathematics, we would expect this correlation to be lower than it would be for the full population of SAT takers. Among high-scoring students, however, this factor still has a low-to-moderate effect on persistence insofar as it affects the type of college attended and the ability to earn high grades in college S/E courses.

Social development in high school. This variable, which consists of achievements in the interpersonal domain, including leadership activities; self-ratings of leadership and interpersonal skills, and participation in various organizations in high school, had some small but notable effects on students' pathways through college. These activities in high school had a small positive effect on getting into a four-year college or university and on finding minority support in college. They were moderately related to the need to find a career that performs a service to society or to the community, but they tended not to contribute to persistence in science. Rather, they either worked to a very small extent as a distraction from S/E or perhaps represented a set of social values that were not satisfied by a commitment to S/E. Although the negative relationship of social development to persistence in S/E is not a strong one, it has also been noted elsewhere (Sax, 1994).

Type of college attended. Students who attended a four-year college or university during their sophomore year were somewhat more likely to persist in S/E than those who were attending a two-year college. The

Astin (1982) findings, though consistent with these findings, were not entirely parallel to the persistence question being investigated here. Astin's population included students having a full range of abilities (not just those scoring high on the SAT) and a full range of major fields (not just those in S/E). Furthermore, he was predicting retention rather than field switching. Nevertheless, the same pattern may hold, namely, that students entering two-year colleges and intending to earn a bachelor's degree, regardless of their major-field goals, may be less successful than those who enroll initially in four-year colleges and universities.

The model also showed that students in four-year colleges and universities indicated that they received greater minority support. Part of the minority support factor was the statement that advice and support from advanced students of their own ethnic group were available. We may assume that students in two-year colleges were less able to envision their futures beyond the sophomore year because there were no older students who could offer advice and support and with whom they could identify. Perhaps, in addition, the need to transfer to another institution to complete their studies may have served as an obstacle to their completion. We might expect it to be easier for students to finish what they are already doing than to apply to other institutions during their sophomore year and have to make the necessary move.

Minority support. According to the model, minority support appeared to have a very important effect on science ambition and commitment to science during the sophomore year, which, in turn, had the greatest effect on status in 1990. Students in four-year colleges and universities appeared to receive the greatest degree of minority support, partly because of the availability of older students and role models of the same ethnic group who could advise and direct them. Minority support had little effect on college grades; its primary effect was on the affective domain: science ambition, attitudes, enjoyment, and willingness to make a career commitment.

Minority support as defined in this model may be viewed as a summation of forces tending to counter perceived prejudice and discrimination. As noted earlier, Nora and Cabrera (1996) found that perceptions of prejudice-discrimination negatively affected minority-student cognitive and affective development. However, those perceptions did not have as large an effect as many other factors in their model, including parental encouragement and positive experiences with the academic and social realms of the institution. The current study is consistent with the Nora and Cabrera results, but minority support has a much stronger positive effect (through its effect on science commitment) than their prejudice-discrimination factor had a negative effect. The difference in magnitude

of effect may be due to the differences in samples, or it may suggest that minority support is more than a force to counterbalance prejudice; it may also provide direction in academic identity formation, opportunities to resolve personal and academic problems, or other support services. Just why the minority support factor plays such an important role in minority commitment and persistence is not knowable from the available data and should be researched further.

Grades in S/E. Grades in S/E had less effect on outcome than interest and commitment did. Because these students were of high ability to begin with, higher or lower levels of ability within this range may not have had a great bearing on student outcome. It is also possible that students were not quite accurate or honest about their grades. Transcript data might have shown true grades to be a better predictor.

It may also be the case that motivation is actually more important than grades. Variables in the PES are not specific enough to sort out all of the attitudinal variables. They are all highly intercorrelated but do not load on a single factor. Problems of multicollinearity prevented the addition of other variables, such as satisfaction with instructors, into the model, although many similar variables did correlate highly with persistence.

Science ambition. The desire to make significant contributions to science or technology, according to the model, was the greatest driving force in making a commitment to S/E. For this sample, minority support in college appeared to kindle and maintain that desire.

The need for security. One of the apparent effects, or at least one of the correlates, of minority support was recognition of the importance of being able to find steady work, job security, and success. This need was not related to persistence in S/E, however, but was retained in the model to show that it was not related and to highlight its association with minority support.

The need to be of service. A career in S/E is probably not often seen as performing a service to the community, being a leader in the community, or working to correct social or economic inequalities. The desire to be of service is moderately correlated with minority support, and according to the model, it is positively affected by the minority support system. The desire to be of service has a small negative effect, however, on persistence in S/E. This pattern of influences suggests that for some S/E students, minority role models and advisors affected them by making them more aware of their ability to serve society and to effect social change, especially if they were active in student government and organizational leadership in high school. At some point early in college, or later, they switched majors from S/E to a field in which they apparently believed they would be more likely to make a contribution.

These results are consistent with two studies cited earlier (Grandy, 1992; Grandy, 1998), which showed a tendency for students to leave S/E if they placed a high value on making a contribution to society. Similarly, it is consistent with Astin's findings of a negative correlation between the desire to make a theoretical contribution to science and time spent socializing and taking history or writing courses (Astin, 1993).

Commitment to S/E. What is perhaps most remarkable is that the commitment to S/E in the sophomore year of college was such a good predictor of S/E status three years later. These two questionnaire items, involving commitment to S/E as a career and enjoyment of S/E as a major field, accounted for over half of the variance in S/E status three years later.

One thing this model has attempted to do is to explain how minority students in their sophomore year of college were able to arrive at a point at which they could make a career commitment. The model has shown that commitment could be predicted by a number of background variables, and that 67% of the variance in the commitment factor could be explained by science ambition, minority support systems, grades, and other background variables.

Lower Female Persistence Rate: An Unanswered Question

One curious result of the analysis was that the model provided no satisfactory explanation for the lower persistence rate of females. Results of interviews conducted by the author (unpublished) have suggested that some female college science students experience a conflict between their passion for science and their desire to have a family, believing that a science career is too demanding and will not allow them sufficient time with family. There were a set of questions in the PES that pertained to what might be termed "family values." They included importance of finding the right person to marry and having a happy family life, having children, and being able to give children better opportunities than they had had. An attempt was made to include this latent variable in the model, but the LISREL program was unable to compute a solution.

One hypothesis to explain why a solution could not be reached is that the family-values variable works differently for men and women. The interview results suggest that it may be a positive incentive for choosing an S/E career for males and a negative incentive for females. To test this hypothesis further and to see if other variables in the model worked differently for males and females, the model was tested for each gender separately.

Several attempts to introduce the family-values variable into the model were unsuccessful because of its close relationship with the secu-

rity variable. Finally, two different models for males and females were tested, one containing security for males and one containing family values for females. The models were tested separately because they did not contain exactly the same factors.

For the male sample ($N = 1,510$), the model solution was nearly identical with the model fitted on the total sample. The fit was about the same ($RMR = 0.07$, $GFI = 0.88$), and the variance explained by the model was 63% (compared with 61% for the combined sample).

For the female sample ($N = 900$), the model fit quite well with the inclusion of family values ($RMR = 0.07$, $GFI = 0.87$) and explained 63% of the variance in outcome. Contrary to the hypothesis based on interview data, family values played a small but positive role in persistence, being correlated 0.12 with commitment to S/E early in college and 0.05 with outcome in 1990. Quite possibly the model contradicted the interview data because interviews were conducted primarily on White students, and the path analysis was conducted on a minority sample whose values and expectations may be quite different.

Other than the two latent variables (security and family values) being different for the two groups, the models were nearly the same. Some minor ways in which the models differed for the two groups are worthy of mention. In the Φ matrix, social development in high school—found to have a very slight negative correlation with outcome for males—was not at all correlated with outcome for females (-0.10 versus 0.00). The correlation between college type and outcome was 0.25 for males, indicating that males who attended four-year colleges and universities were more likely to persist in science than males who attended two-year colleges. For females, this correlation was trivial (0.04); there was essentially no relationship between college type and persistence. Minority support in college also appeared to be more important to persistence for females than for males.

Science ambition, which was related to gender, was affected by math/science achievement in high school more for males than for females. This finding may suggest that males, more than females, were likely to commit themselves to a career based on their talents and achievements. Females may have recognized that they had math/science skills and abilities, but may not have felt that those skills and abilities could or should turn into a career. Alternatively, females may not have recognized that they had high math/science skills, even though they had high grades in those subjects. Another interpretation is that the statements themselves may sound overly ambitious, even arrogant, to some people. If females more than males see making a contribution to basic scientific theory as something that is beyond the dreams of most scien-

tists, they may indicate that such an outstanding achievement is not what they expect to accomplish themselves. They may still, however, plan to be good scientists. These speculations, of course, require more research.

Commitment to S/E was affected by college S/E grades somewhat more for males than for females. This finding is consistent with the finding discussed above, showing, for females, less of a relationship between high school math/science achievement and the desire to do science.

Finally, in the prediction of student status in 1990 (outcome), the type of college attended had less effect on outcome for males than for females (path coefficient was 0.32 for males and only 0.09 for females). Commitment to S/E during the sophomore year, especially for females, was almost a guarantee that they would still be in S/E three years later (path coefficient for females was 0.85).

Most of the differences in the models for males and females were quite small. They are pointed out here because, for the variables mentioned, the factor loadings for males and females differed by two or more standard errors. In some ways, however, the path to success did appear to be slightly different for men and women.

Males who were able to enter four-year colleges and universities appear to have had greater access to, and need for, minority support systems, especially more advanced students to serve as role models and advisors. Those support systems appear to have encouraged interest in S/E and promoted greater science ambition. Those with higher ambitions were more likely to make a commitment to S/E as a career. Males making a commitment in their sophomore year were likely to remain in S/E for at least the next three years.

For females, it appeared to be less important whether they entered a two-year or four-year college. But for both genders, enjoying S/E and making a commitment to an S/E career by the end of the sophomore year almost ensured that they would still be in S/E three years later.

Policy Implications

An enthusiasm for science and engineering either builds or diminishes during the first two years of college. The availability of a minority support system appears to be an important part of the process of building this enthusiasm, especially for males. Males in two-year colleges are less likely to persist in S/E than are males in four-year colleges. The model indicates that this occurs for at least two reasons, one being that students with weaker academic skills are more likely to attend two-year colleges, and the other being that students in two-year colleges lack con-

tact with more advanced students of their ethnic group who can serve as role models and advisors.

There may be many ways that two-year colleges can strengthen their minority support systems. It appears from the data that for males it is important to have the advice and support of advanced students of the same ethnic group as well as a dedicated minority relations staff. Perhaps a linkage with a nearby four-year college or university in which minority students could develop personal ties with more advanced students would be productive.

A second advantage of a linkage with a larger institution would be to strengthen students' visions of their educational and professional goals. It can be difficult to envision a personal goal, such as being a scientist or engineer, without first envisioning what it is to be a junior or senior. Perhaps each step of the educational process—not just the goal—should be clearly visible to the student. Those stepping stones to success, namely the junior and senior years, as well as graduate school years, should be in sight for every student. To know the goal without the path, and to see no other minorities on the path ahead, could be discouraging.

A third reason to provide a linkage with a four-year college or university would be to facilitate the transition to that institution. The transition from a two-year college to a four-year college appears to be especially difficult for minority students. Tschechtelin (1981) found that among students who entered community colleges in Maryland with the intention of transferring to a four-year college only 53% of Black students actually transferred compared with 71% of White students.

A relatively small negative effect on persistence appears to be participation in various types of clubs and organizations. This explains, at least in part, why a smaller proportion of women than men persist—greater proportions of women than men participate in social activities. One might suspect that there are several factors that may account for this effect. S/E fields are academically demanding, and a student has only so much time to devote to studies and extracurricular activities. Although we do not want to perpetuate the stereotype of the lone scientist, awkward and unsocialized, it is important to impress upon minority students that a commitment to studies will pay off in a satisfying career. Social events not only occupy time that could be devoted to S/E studies, but they can serve as distractions from a goal. The balance between being "well rounded" and developing an area of expertise can be difficult to achieve. Perhaps S/E students could be made more aware of the fact that maintaining this balance throughout life is necessary and not easy.

Related to interests in clubs and organizations is student concern about performing a service to society or the community. Not all students

have a desire to serve or have social or political ambitions. But it is unfortunate that for some people the desire to perform a service is in conflict with being a scientist or engineer. Other research, mentioned earlier, confirms that many students leave S/E so that they can do something to benefit society. It is a sad commentary on science and engineering that they cannot be perceived as capable of benefitting society. Science and engineering need the efforts of the academic community to change their image—a negative image having been largely constructed by the media. Science and engineering departments could take responsibility for improving the image of their professions by pointing out the improvements in medicine, transportation, and creature comforts that have arisen from technology and from our understanding of nature, rather than allowing the media to emphasize the destructive forces of bombs and air pollution. Students do not have to leave S/E to perform a service.

Finally, this model did not emphasize sufficiently the importance of math/science skills because the sample was drawn from students who scored relatively highly on the SAT mathematics test. We would expect the model to show that math/science achievement in high school has very large effects on persistence if the entire population of test takers were studied. Even in this select sample, high-school math/science achievement and college grades had an impact on persistence. Though we focus on the various environmental and motivational factors influencing student persistence, it is important not to forget that academic preparation and high quality college course work are essential for minority student success in science and engineering.

Research Implications

In sorting through the maze of variables affecting minority S/E students, several mysteries have arisen. Valuable insights may be gained by researching these questions:

- What is it about minority support systems that motivate students to enjoy science and engineering and to make a career commitment to an S/E field?

By examining the components of minority support systems in different colleges and universities, we could determine which components make the greatest contribution to minority persistence in S/E. Correlations among variables in the model suggest that minority support actually increases the student's enjoyment of S/E coursework as well as their decision to make a career commitment. Minority support does not ap-

pear to have much direct effect on grades, which suggests that it is not a tutorial component that is operating. Rather, its effects are on the affective quality of S/E studies, perhaps increasing confidence or stressing the importance of study or commitment, or simply the enjoyment of making scientific discoveries. Just what these components are could be learned through more in-depth studies.

- Why does commitment to S/E during the sophomore year almost ensure success through graduation?

Research into the nature of the relationship between sophomore commitment and later persistence could lead us to understand whether it is the act of making a commitment that keeps the student on target, or whether there is something about completing the first two years of coursework successfully that gives the student encouragement to complete the last two years. It may be the nature of the curriculum that contributes to this commitment, with many of the most difficult courses, such as organic chemistry, being taught in the sophomore year. Once over the big hurdle, so to speak, students may feel confident that they can complete the rest. Whatever the reasons, the dynamics of this commitment and later persistence could be better understood, and that understanding may provide important information for curriculum developers.

- Why are minority role models and advisors more important for males than females?

The model indicates that male S/E students appear to need minority support more than female S/E students do. This finding should be confirmed with other data in other contexts to see if it is universally true and to see if the model is being interpreted correctly. If so, the exact dynamics of the relationships between students and minority role models and advisors should be researched. Perhaps the minority support system works differently for women and perhaps it should be structured differently so as to increase minority female participation in S/E.

- Are attitudes and enjoyment really more important than achievement?

Which is more important to success—attitude or achievement? This is an age-old question, but in the context of minority and female success in S/E, it is an important question. The data in this model seem to suggest that enjoyment of science is far more important for persistence than grades. This conclusion probably applies to high-ability students and not to a general population of high school seniors planning to be scientists or engineers. Recall that the sample was selected from the population of

SAT takers earning mathematics scores of 550 or higher. The assumption underlying the sample selection was that anyone scoring over 550 had the academic ability to succeed in science or engineering provided they had the motivation and educational support. The purpose of the study was primarily to explore the effectiveness of various educational and social support systems. No doubt, if the same survey had been conducted on all high-school students planning to study S/E, grades and test scores would have played a far greater role in predicting persistence.

This type of analytical model should be tested on different student populations to determine how much of our energy and resources should be put into improving cognitive skills and performance in coursework and how much should be directed towards motivational components of minority support programs.

- Why should the type of college attended (two-year or four-year) affect the persistence of males and not females?

It is understandable that two-year colleges lack the minority support offered by more advanced S/E students and that they accept students with more questionable academic records, but it is not clear at all what other effects it has on student persistence. We have no basis for understanding why the persistence rate of females is unaffected by whether they are in two-year or four-year colleges. First, this finding should be tested on other samples to see if it is true in general. Then, second, if it is true in general, a study should be done in greater depth to see whether there are truly institutional effects or whether some other set of variables (covariates) are operating.

- Why do females have less science ambition than males, even when they have the same levels of achievement?

Findings from this study indicate that even when males and females have the same levels of math/science achievement, females have less ambition to make scientific discoveries and contributions than males do. Do female S/E students have lower aspirations than males? Do they receive less encouragement from professors than males do? Are females less likely than males to associate academic success in a field with choosing a career in that field? Do females entering S/E professions see themselves perhaps as working in a laboratory but not personally making a scientific discovery or contribution? A more detailed study comparing the attitudes and expectations of male and female S/E students may reveal very different views of what it means to be a scientist or engineer, and some commonly held perception on the part of female students may prevent some from achieving all they are capable of achieving.

- Can coursework be more enjoyable?

It has not always been the goal of educators to make coursework enjoyable. Findings from this study indicate, however, that minority S/E students who enjoy their studies are likely to make an S/E career commitment and successfully complete their studies. To increase the numbers of minority students who persist in S/E, it follows that a reasonable approach would be to improve their enjoyment of their courses. The data suggest that minority support systems, in some way, are successfully helping students to do just that. Further research should be conducted to learn what components of the minority support systems are actually increasing enjoyment of coursework. These components, if identified and understood, could perhaps be implemented in other S/E departments to increase minority participation and success.

Notes

¹The decision regarding which disciplines to include in S/E was made in accordance with the consensus of the NSF Committee on Equal Opportunities in Science and Engineering (CEOSE).

²It is generally recommended that ordinal variables be analyzed by the weighted least squares method, but to do so requires the asymptotic covariance matrix as well as the matrix of correlations. The asymptotic covariance matrix requires complete data on the part of all subjects. Because of the large number of variables in the models tested, to include only those students who answered all questions would reduce the size of the sample to near zero. Furthermore, Jöreskog & Sörbom (1988) have conducted a number of experiments comparing LISREL analyses of variables having different scale types and have found that despite the fact that ML assumptions were not met, ML still gave good results.

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Student Protest and Multicultural Reform

Making Sense of Campus Unrest in the 1990s

Introduction

The mid-1990s saw the release of two films, "PCU" and "Higher Learning," both of which relied heavily on stereotypes of contemporary student activists and their corruption of the academy through what has often been described as "political correctness." In both of these films the message is clear: The university of the 1990s is besieged by students who have replaced dispassionate and objective pursuit of knowledge with political correctness and identity politics. Unfortunately, simplistic treatment of contemporary students is not left entirely to the film industry. Sacks (1996), in his book *Generation X Goes to College*, assails the "postmodern Balkanization of knowledge and power" in which students are part of a "broadside attack on modern institutions" (p. 141). For Sacks, the "postmodern student" is one who "knows the value of learning but expects to be entertained. He has a keen sense of entitlement but little motivation to succeed. That is the essence of Generation X" (p. xiii).

The criticism of contemporary students has by no means been limited to the popular media, for the attack has been waged on a variety of intellectual fronts as well. For example, D'Souza (1991) assailed campus identity politics for, in his words, supporting "the victim's revolution." Likewise, Schlesinger (1992) attacked what he described as the "cult of ethnicity" for rejecting "the unifying vision of individuals from all nations melted into a new race" (p. 16). For Schlesinger and D'Souza, as well as other notables such as Lynne Cheney and William Bennett, iden-

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tity politics of the 1990s threatens the foundation of a common national identity. In Schlesinger's words, "It belittles *unum* and glorifies *pluribus*" (p. 17). Moreover, student activists engaging in identity politics are often described as a threat to the very fabric that holds the United States together, as Schlesinger maintained: "The cult of ethnicity has reversed the movement of American history, producing a nation of minorities—or at least of minority spokesmen—less interested in joining with the majority in common endeavor than in declaring their alienation from an oppressive, white, patriarchal, racist, sexist, classist society" (p. 112).

All of this is to suggest that perceptions of the fragmentation of the academy as a consequence of campus multicultural initiatives during the early and mid-1990s had achieved near mythical proportion despite strong evidence suggesting otherwise. For example, Astin (1993a) discussed findings from a national study, part of which focused on student outcomes associated with institutional commitment to multiculturalism: "The fact that a strong emphasis on diversity enhances the student's commitment to promoting racial understanding is of special interest, given that some critics have alleged that emphasizing issues of race and multiculturalism tends to exacerbate racial tensions on the campus. Quite the opposite seems to be the case" (p. 46).

Resistance to multiculturalism, however, is not limited to voices from the Right. Attacks also derive from liberal-leaning social critics who have grown impatient and mistrustful of what they see on today's campuses. Perhaps the most astute criticism derives from Gitlin (1995), who, interestingly enough, was one of the young Leftists contributing to the rise of the Students for a Democratic Society (SDS) back in the early 1960s. Now a professor at NYU, Gitlin has adopted more of a centrist position in his criticism of identity politics and multiculturalism. Though Gitlin assuredly agrees with the democratic vision of educational opportunity for all, he sees identity politics as a detour and a new kind of orthodoxy enforced through institutional policies. Gitlin's apprehension largely concerns the breakup of the Left: "The cultivation of difference is nothing new, but the sheer profusion of identities that claim separate political standing today is unprecedented. . . . What is a Left without a commons, even a hypothetical one? If there is no people, but only peoples, there is no Left" (p. 165).

But the research undergirding this article suggests that the "separate political standing" that Gitlin alludes to is not nearly so separate as he believes it to be. The identity struggles described throughout this article are hardly the unbridgeable domain of isolationism Gitlin and others rightfully fear. Their fundamental mistake may be more a matter of attri-

bution error than the actuality of culturally diverse others who have supposedly closed the door to communication with White males and any other human manifestation of power and privilege. Even the most strident students of today's "culture wars" are more than willing to join arms with others who support more participatory forms of democracy. Perhaps the "common dreams" that Gitlin speaks of as part of the vision of the Left, are not so distant after all but hidden in the daily muck of misunderstanding. Instead of seeing multiculturalism as the "vexatious balkanization of America," we may be far better off, as Takaki argues, "responding to our diversity as an opportunity to open American minds" (1993, p. 3).

Clearly, the term "identity politics" often has been used in a pejorative manner to condemn student struggles linked to race, gender, and sexual orientation. However, in this article I argue in favor of a counter-interpretation: That the efforts of diverse students to forge their own place in campus life through organized demonstrations may also be understood as a form of participatory democracy. Thus, identity politics represents not so much the coming apart of a democratic republic, as Schlesinger (1992) maintains, but instead may be understood as democracy playing itself out, as diverse students seek to build a truly multicultural society through the colleges and universities they inhabit.

In suggesting a counter-interpretation, I am not simply playing the "devil's advocate." I truly believe that in addition to abuses of identity politics, as have been so frequently cited, there have been and continue to be constructive multicultural reforms enacted through political strategies organized around identity concerns. And while some scholars of higher education may question the relevance of such reform, many others point to the pressing need to diversify the academy (García, 1997; Hurtado, 1992; Tierney, 1993).

Thus, the goal of this article is to capture the tenor of a new generation of campus activism organized around multiculturalism. To accomplish this goal, I focus on the organizational context in which student protest is enacted. I utilize qualitative methods and organize my discussion around five case studies of student protest (protest is defined here *as a form of activism primarily intended to create organizational disruption as a means to raise public awareness and force institutional change*). Specifically, I discuss the Mills College strike of 1990, the Chicano studies movement at UCLA culminating in 1993, gay rights demonstrations at Pennsylvania State University from 1991 to 1993, African American student resistance at Rutgers University in 1995, and financial aid protests involving American Indian students at Michigan State University from 1994 to 1996.

Contemporary Student Protest in Perspective

Throughout the 1990s, a number of U.S. colleges and universities have witnessed their share of campus unrest as a new generation of student activists have come to populate institutions of higher learning. Although the extent of campus unrest is difficult to ascertain, a number of analysts suggest that there certainly is an increase in comparison to the previous two decades (Levine & Cureton, 1998; Levine & Hirsch, 1991; Loeb, 1994). Apathy is alive and well, but there is nonetheless evidence that student protest and a commitment to campus and social change has once again surfaced, at least among a significant body of students.

Although it is likely that career-minded students are still in the majority (Astin, 1998; Dey, Astin, & Korn, 1991; Levine & Cureton, 1998) and the "slacker" image of Generation X may apply to many (Sacks, 1996), amidst the most diverse population of college students in U.S. history there has emerged a sizeable group of students who have little interest in maintaining the status quo. And perhaps it is far more than coincidence that among this most diverse population of students it is *diversity* itself that lies at the heart of much of their protestations. From efforts to forge a multicultural curriculum (Leslie & Murr, 1993; Princeton University, 1995), to complaints about the lack of commitment to underrepresented minorities in college and university enrollment practices (Guernsey, 1996; U. of Mass., 1997), to student responses to racist, sexist, or heterosexist behaviors (Hurtado, 1992; Rhoads, 1994, 1995; Sidel, 1994; Students Rally, 1996), issues of diversity undergird so much of the campus tension of the 1990s that both conservative and liberal scholars have pointed to these occurrences as evidence of the fragmentation of American society (D'Souza, 1991; Gitlin, 1995; Glazer, 1997; Hunter, 1991; Schlesinger, 1992).

Getting a handle on the extent of the 1990s student movement is difficult in that identifying and gathering meaningful statistics about student protest is next to impossible. Even the research conducted on student activism of the 1960s leaves much disagreement about the extent of protest during what most believe to be the highest period of campus activism in U.S. history (Baird, 1970; Lipset & Altbach, 1967; Peterson, 1966). Certainly, the 1990s are far removed from the measure of activism that occurred during the "decade of unrest." And there is perhaps some agreement that the decade of the '90s has witnessed an increase over the previous two decades. Despite the general limitations of the data, what do we know about this decade?

There are a number of indications that protest indeed has returned to many campuses around the country. For example, there is evidence to

suggest that student activism has increased throughout the late 1980s and into the early 1990s (Levine & Hirsch, 1991). Volunteerism, although obviously not the same phenomenon as political and social protest, nonetheless provides evidence of an increasing social consciousness. The growth in the early 1990s of campus volunteer organizations such as Campus Compact, which by the early part of the decade had recruited over 250 campuses (and over 500 by 1997), and Campus Outreach Opportunity League (COOL), which was working with more than 600 colleges by 1992, provides support (Rhoads, 1997). The sense that students of the early 1990s were exhibiting a renewed commitment to community and social concerns led Levine and Hirsch (1991) to describe a new wave of activism on American college campuses. Additional support comes from the environmental movement. For example, the first national student environmental conference, called Threshold, attracted over 2,000 students to the campus of the University of North Carolina, Chapel Hill in 1989. The next year, 7,000 students attended the event at the University of Illinois, Urbana-Champaign. More recent research from the UCLA Higher Education Research Institute (HERI) headed by Astin (1996) confirms high rates of service involvement among incoming students: Three out of four first-year students report volunteering "frequently" or "occasionally" during the previous year.

There have been a few large-scale data gathering efforts to assess student activism. Again, research from HERI revealed that 37% of incoming freshmen in 1989 reported that they had participated in a demonstration of some kind the year before going to college. Three years later the figure was even higher as it rose to 40% (Astin, 1993b). Contrast these figures with the 15.5 and 16.3% indicated back in 1966 and 1967, years that are believed to be near the peak period of student activism (Astin, 1993b). The point of the HERI data is that they indicate the potential for a rising tide of involvement in protest among college students. Also, Levine and Cureton (1998) conducted an extensive study of U.S. campuses and noted that 93% of campuses they visited had experienced student unrest within the previous two years. Based on surveys of undergraduates conducted in 1969, 1976, and 1993, Levine and Cureton also note the following: In 1969, 28% of undergraduates reported participating in a demonstration; in 1976, that figure had dropped to 19%; by 1993 the percent involved in demonstrations had risen to 25%, only a few percentage points from the level reported in 1969. And Loeb (1994) offered rich qualitative evidence of a high level of commitment to political and social change among contemporary students, but as he explained, their efforts may be drowned out by higher levels of student apathy.

The preceding paragraphs provide a context for situating the 1990s

within the larger landscape of student protest. However, my primary concern relates to contextualizing the central theme of student unrest during the 1990s and providing insight into how students make sense of their participation in contemporary campus demonstrations. With this said, I turn now to a discussion of method before introducing my findings.

Method

The goal of this research study is to advance understanding of contemporary students in general and campus protest in particular. I chose case study as a methodology because of the need to adapt research strategies to the particular organizational context. This, as Yin (1989) points out, is one of the strengths of case study research. For example, Astin, Astin, Bayer, and Bisconti (1975) used case study research to contextualize their national findings of student involvement in campus protests in the early 1970s. Zald and Berger (1978) offered support for situating analyses of social movements within organizational contexts when they suggested that organizations are primary vehicles for social change.

In order to conduct case study research, one must be clear about the kind of phenomenon to be studied. In the case of this project, the primary concern is identifying the nature of student protest (as a form of activism) as it is revealed on contemporary college and university campuses. Therefore, appropriate cases must be identified in order to conduct in-depth analysis. The early challenge in framing the study, then, was to select representative cases that might yield understandings of contemporary student protest as a social movement. A first step in developing a helpful sample of cases was to get an idea of the terrain of student protest during the decade. This was accomplished through an analysis of reported incidents of student demonstrations as described in national and regional newspapers, such as the *New York Times* and the *Chronicle of Higher Education*. After an extensive search, over two hundred major incidents of student unrest were identified. These incidents were then analyzed to identify possible themes. The vast majority of campus incidents (nearly 60%) were associated with racial and ethnic struggle, women's concerns, or gay rights activities and represent what recent scholars have described both affectionately and pejoratively as "culture/cultural wars," "campus wars," "multicultural unrest," or "identity politics" (Arthur & Shapiro, 1995; D'Souza, 1991; Gitlin, 1995; Hunter, 1991; Rhoads, 1994, 1995; Sidel, 1994). The remaining examples of student protest concerned funding (including tuition concerns), governance, world affairs, and environmental causes.

It is worth noting that Levine and Cureton (1998) also identified mul-

ticulturalism as the primary source of campus protests in the 1990s, noting that 48% of the campuses they visited had experienced student demonstrations tied to multicultural concerns. This figure likely would have been significantly higher had Levine and Cureton included gender issues (the fourth highest source of campus protests in their study—37%) and gay/lesbian issues (the fifth highest source—15%) as part of their definition of multiculturalism, as I have done in this article.

After confirming my initial hypothesis that multiculturalism, typically enacted through identity politics, was indeed the central strand of contemporary student unrest, the next step was to select various cases for in-depth study. Accordingly, I selected five cases covering the key identity struggles highlighted by the broader analysis and focused on issues of race, gender, and sexual orientation.

I relied on data collection tools commonly recommended in conducting qualitative case studies (Yin, 1989). Specifically, data collection involved 101 formal and 9 informal interviews with students, alumni, faculty, staff, and community members. A general interview protocol was developed and later adapted to each institutional context and to the particular set of individuals being interviewed (i.e., faculty, students, community members, etc.). Documents such as memos, letters, newspaper articles, and editorials also contributed to the data base. Additionally, artifacts such as films and audio recordings of campus incidents and student organizing efforts were collected.

The Mills, Rutgers, and UCLA sites were visited at least two times within a two-year period and are what might be termed “retrospective” case studies in that the demonstrations had already taken place when data were collected. The first visit took place in year 1 of the study and involved establishing initial contact and identifying key informants through informal conversations and preliminary document analysis. Although a few formal interviews occurred during year 1, the majority were conducted during the second site visit and after I had achieved greater familiarity with the specific case of student unrest and the key participants involved. Students who had already graduated were contacted through their alumni/alumnae office, and many were interviewed over the telephone. In terms of the Michigan State and Penn State case studies, I was employed at these institutions during the student protests and thus was able to collect data over the course of the demonstrations.

The formal interviews were tape-recorded and transcribed verbatim. The interview transcripts along with the documents and field notes from observations formed the body of data that were analyzed. Interpretation of the case studies involved coming to terms with the meanings campus constituents gave to various student actions and their organizing in gen-

eral. In analyzing the data I employed content analysis as I sought to identify themes related to the key research questions: What meaning do students give to their participation in campus demonstrations? And, What significance does multicultural student protest have for understanding the collegiate experience during the 1990s? Member checks were employed by sharing initial drafts of the case studies with students and faculty, who provided feedback for subsequent rewrites (Lincoln & Guba, 1985).

Findings

In what follows I describe the five case studies by first offering a general description of the particular student movement and how it was connected to identity concerns. I then describe "precipitating events" that in effect served to escalate the level of student commitment and ultimately contributed to highly visible campus demonstrations. I go on to delineate the "student response" to the precipitating events by describing key demonstrations students enacted. Finally, I highlight organizational outcomes associated with the particular student movement.

The Mills College Strike of 1990

As the last decade of the twentieth century opened, nowhere was the power of student protest more vivid than in the spring of 1990 on the campus of a small liberal arts college nestled in the hills of west Oakland. During the academic year 1989–90, officials at Mills College debated the future of the college and whether or not Mills should admit male undergraduates as a way of increasing student enrollment. When the decision to admit men was made in May of 1990, the women of Mills immediately called for a strike to shut down the college.

From early on it was clear that the strike, which lasted two weeks, was linked to the larger struggle for women's equity and that preserving Mills as an all-women's college was more about promoting women's achievement than it was about denying males the right to a liberal arts education. The fact that the strike was linked to the larger struggle of women in the United States was made obvious by those involved: "This strike is a dam stemming the tide of closings of women's colleges across the country. Our struggle will not end with this strike. It goes on into next week, next year and until all women of every kind are represented equally in this society" (Curtis, 1990, p. 1).

An alum of the college who had been involved in the strike made a similar point when she spoke of the advantages of Mills: "Mills provides

a setting where women are more apt to take risks. They're more apt to speak out in class. They're more apt to take leadership roles. I just think that it really prepares women to go out in the world and do what they want to do. It's a four-year kind of haven." Another former student involved in the strike commented: "Mills is not so much about escaping sexism. You can't ever escape sexism—if you're a woman, you're a woman, and you don't get away from gender issues just because you go to a women's college. In a way they are even more present. But at Mills, you don't have to deal with whether you're male or female as much. You're simply a student."

That the Mills College strike was primarily tied to issues of women's identity was also apparent in symbolism employed by student strikers. Posters appeared around the campus depicting a woman standing tall, with arms raised to the sky as if celebrating a momentous victory. Written on the posters were the words, "Strong women, proud women." This simple statement became the students' mantra and the driving vision behind their commitment to preserving a women's space in higher education.

The fact that the Mills College strike was linked to women's concerns contributed to resistance from traditional-minded critics who complained of a double standard. They pointed out that there was much resistance to military academies such as The Citadel and VMI enforcing their long-standing policies of only admitting men. Supporters of Mills College and its commitment to women were quick to counter that Mills was a private institution and that the military academies in question received federal and/or state aid. Mills' supporters also argued that the career and educational opportunities for men and women were still quite unequal and that this alone might justify all-women's institutions such as Mills (Hartman, 1990).

Precipitating event(s): Of course, the key event triggering the Mills strike was the announcement by the president and board of trustees in the spring of 1990 that the school would begin admitting men in the fall of 1991. The decision was primarily based on financial concerns linked to the stock market crash of 1987 and a desire to reposition the college to take advantage of the changing social and technological context of the 1990s. The announcement followed months of rumors and denials that college officials were seriously considering admitting men. As one alum, who attended Mills at the time of the strike, explained: "Everyone was afraid the announcement would be about going coed, but the board had downplayed it. A big deal had been made about the fact that they had three or four options. But I did not feel that they were completely straightforward with us, that going coed was their top option. We heard over and over, 'Oh, it's only one of the choices.'"

Student response. Within hours following the official announcement by President Mary Metz and Board Chair Warren Hellman, the women of Mills blockaded every administrative entrance at the college and for the next two weeks effectively shut down the operations of the school. Mills College alumnae came out in support of the student strikers as they made pointedly clear their intention to withdraw financial support to the college if it went ahead with plans to admit men. During the two-week long strike, the campus witnessed a media barrage as the students' story was televised throughout the country and included an appearance by Mills women on the Phil Donohue Show. In the end, the pressure of the student strike, lack of alumnae support for the decision, and national opinion were too much, and as a consequence the board reversed its decision and Mills remained an all-women's college.

Organizational outcome(s). The outcome of the two-week long strike was a complete reversal by the board of trustees and a renewed commitment to women's education. President Metz was replaced by Janet Holmgren McKay, who, in short time, made her commitment to women's education known by announcing that the issue of coeducation was dead at Mills. Charged by their success, the women of Mills continued to exhibit high levels of campus activism, much to the consternation of more than a few officials. As one explained: "One of the fallouts of the strike that is not so great, is the students got their way. They overturned the board's decision and now sometimes they say, 'We did it once and we can do it again.' They think they can get whatever they want. Protesting is a way they see to get what they want." This individual went on to point out that recently students at Mills were once again demonstrating, but this time it was over the lack of diversity among the faculty. "They want more faculty of color. They want to have some kind of power over how the affirmative action statement is written."

Gay Liberation at Penn State

In October of 1992 approximately thirty lesbian, gay, and bisexual students stood together on the steps of Pennsylvania State University's school auditorium and fought off years of tears and the pain of "the closet." The event was part of National Coming Out Day, and the students shared their experiences with an audience of roughly two hundred students. "Lesbian, gay, and bisexual people have two choices: Come out or stay in your closet and continue hating yourself," exclaimed one of the leaders of the Lesbian, Gay, and Bisexual Student Alliance (LGBSA). "Coming out is better than hating yourself. . . . It's about celebrating yourself."

For nearly two years, LGBSA staged a variety of public events and

open forums as a means to pressure the university to add a sexual orientation clause to its official statement of non-discrimination. Coming out during events such as National Coming Out Day were more than individual acts of identifying with one's same-sex attractions; it was about claiming a public identity, becoming visible, and offering support to the larger struggle for lesbian, gay, and bisexual liberation and equal rights.

The efforts of students at Penn State to advance gay liberation hinged on constructing a public identity in response to conservative resistance to equal rights for lesbian, gay, and bisexual people. This was most apparent by the way in which several students discussed visibility and the role of coming out. A student explained, "Heterosexual culture is very set on making gay and lesbian people invisible, whether they use physical violence or institutional violence. Coming out is a way of battling back." Another student added, "My ultimate goal would be for someone to be walking around and someone else call them a name like 'fag' or 'queer' and have it sound as silly as me calling someone straight." And a faculty member commented as well: "What we have learned . . . is that our best defense against bigotry is visibility, our greatest hope for change is neither assimilation nor silence, but identifying ourselves as a people."

As part of their commitment to visibility and to identity politics in general, many students openly embraced what they described as "queer" identity. Reclaiming the term "queer" was part of an assertive strategy to pursue gay liberation. A student elaborated:

I use the term "queer" to make people aware that I'm not excluding bisexuals and lesbians. It's not even in vogue yet among some queers. It's more of an activist, assertive term. It connotes pride in being a homosexual or bisexual. "Gay" possibly used to imply the same thing. It's adopting a term that was used in a negative way and conveying a different message, a message of pride, happiness, celebration.

A second student added, "Queer to me is different than gay. Not just because it includes lesbians and gays, but it's more of an attitude. There is a political aspect of being queer. You have to be political to be queer but you don't have to be political to be gay." In elevating a highly visible and politically oriented form of identity as a social change tactic, LGBSA students at Penn State evidenced their belief that the struggle for gay liberation necessarily involved the politics of identity.

Precipitating event(s). No singular event triggered increased activism on the part of LGBSA in the early 1990s. Instead, a series of occurrences dating back to the early 1970s set the stage for increased political activity by lesbian, gay, and bisexual students of the 1990s. The first

major event was the university's attempt in the early '70s to deny official organizational status to the Homophiles of Penn State (HOPS), a student organization comprised of lesbian, gay, and bisexual students. On February 11, 1972, HOPS filed a law suit against the university alleging that their First (right to free speech) and Fourteenth Amendments (right to equal protection) had been violated. Eventually, the case was settled out of court and HOPS was granted official status as a student organization. However, the university was not finished with its battle against "homosexuals," for it attempted to deny Joseph Acanfora his Pennsylvania Teacher's Certificate because of his membership in HOPS (Acanfora was one of the student plaintiffs named in the law suit). This case ultimately went before State Education Secretary John C. Pittenger, who approved the certification and saw no basis for the actions taken by the university.

More recently, two events served to increase political organizing by lesbian, gay, and bisexual students, who by the early 1990s had changed their organizational name to LGBSA. The first event took place in 1989 and involved a computer-generated message created by a Penn State student which offered a rationale for "killing homosexuals." The second key event was a comment by the head coach of the women's basketball team, who told a national newspaper that she would not permit homosexuals on the team.

Student response. Homophobic actions during the late 1980s and early 1990s helped to galvanize not only LGBSA, but also lesbian, gay, and bisexual faculty and staff, as well as their allies. The result was a high level of campus protest as rallies, marches, and teach-ins increased. At the same time that LGBSA advanced its public struggle to achieve what they saw as "equal rights," conservative student groups upped their level of resistance and attacked what they described as "special privileges accorded to homosexuals." By 1992, it was common to see a gay pride rally on one side of a major campus thoroughfare and a counter-demonstration across the way.

In addition to the annual National Coming Out Day rally, LGBSA also organized Pride Week and offered a variety of educational programs such as "Straight Talks," which involve a group of students speaking to a class or residence hall about what it means to be lesbian, gay, or bisexual. Perhaps the most effective demonstration was one that never moved beyond the planning stage. As part of their effort to pressure the Penn State board of trustees to approve the proposed statement of nondiscrimination, LGBSA students planned a takeover of the president's office. In a confidential meeting with a key representative of the board, the students revealed their plan and gave the board one last chance to approve

the policy. At its next meeting the board passed the sexual orientation clause, and the students of LGBSA claimed a victory.

Organizational outcome(s). Although LGBSA was able to celebrate its contribution to getting the clause approved, their quest for equal rights and liberation would continue for years to come, as new issues such as the unequal treatment of "homosexuals" in ROTC and the university's lack of support for the partners of lesbian, gay, and bisexual faculty and staff would be issues into the mid-1990s. Additionally, in 1997 the emergence of a conservative student group known as S.T.R.A.I.G.H.T ("students reinforcing adherence in general heterosexual tradition") emerged as a major barrier to gay liberation at the university.

For the students who stood on the steps of the school's auditorium in the fall of 1992, their eventual participation in the national march on Washington, DC, the following spring culminated years of struggle. For these students, reforming the climate at Penn State ultimately was part of their effort to build a more inclusive society where discrimination based on one's sexual orientation would be nonexistent.

The Chicano Studies Movement at UCLA

For over twenty years, UCLA provided support to a Chicano studies interdepartmental program only to see its viability called into question on an almost yearly basis. By the early '90s, Chicana/o students had grown weary of the ongoing struggle to keep the program alive and demanded a more vigorous commitment from the university. They thought that the program needed to be strengthened and that granting it departmental status with the authority to hire and promote its own faculty was a way to ensure its survival. A plan for a Chicano studies department was developed by a group of faculty and presented to Chancellor Charles Young in January of 1992. Over a year later, in April of 1993, Chancellor Young announced that he would not pursue the plan to elevate Chicano studies to departmental status. The announcement launched a series of student protests beginning with a sit-in at the UCLA faculty center and ending with a 14-day hunger strike.

For the students involved in the 1993 demonstrations, Chicano studies was seen as a link between the university and a city comprised of the largest Mexican American population in the country. Building a strong department was not simply a battle over who decides curricular matters; the protesters' fight was part of a larger effort to improve the place of Mexican Americans and enable them to connect to a rich culture and history. The Chicano studies movement at UCLA offered evidence of the growing cultural identity commitments of Chicanas/os and represented a

return to the identity politics (La Raza) that many of their parents embraced with the early founding of organizations such as MEChA (Movimiento Estudiantil Chicano de Aztlán). Comments from contemporary Chicana/o activists at UCLA confirm such an analysis: "Chicana/o studies gives us intellectual space. . . . We're always fighting for our history and culture in an elitist institution such as UCLA. It's about empowering our people. . . . Basically, we are fighting for our own space in one of the most prestigious institutions in the United States." A second student also provided insight into the connection between Chicano studies and the larger struggle of Chicanas/os:

We saw it [Chicano studies] as a cultural center where the community could come in with problems. . . . And the center would help the community to do research to solve their problems. . . . We want a place where people can get the kind of service that a university is supposed to provide. What's really important is educating our students. By that I mean not schooling them but truly educating them on their roots, on who they are. They need to graduate from the university and be more than just a doctor for the establishment. They need to go back to their communities and service our people. It's basically an issue of education versus schooling. What UCLA offers is schooling. They train you. They train you to do things that this society needs in order for the status quo to continue. We wanted a department of Chicano studies to be something more than that.

This student's perspective reflects the early motto of the Chicano student movement in Southern California as it evolved during the late 1960s and early 1970s: "Of the community, for the community" (Gómez-Quíñones, 1978).

Leo Estrada, a faculty member who eventually helped to negotiate a compromise resulting in the creation of the César Chávez Center, described the actions of today's Chicana/o students as a "search for their roots" and compared their struggle to what Blacks had gone through a decade or two earlier in their quest to connect to Africa. The challenge today's Chicana/o students face involves establishing a firm sense of cultural identity. As Estrada pointed out, what has emerged is the realization among many of the young that one's identity as a Chicana/o cannot be divorced from one's heritage. In this regard, the movement at UCLA reflects what has been described as "Chicanismo"—a form of racial/ethnic nationalism with an emphasis on cultural consciousness and heritage (Gómez-Quíñones, 1990).

Precipitating event(s). Although the Chicano studies movement at UCLA comprised nearly three decades of struggle, originating back in the late 1960s and early 1970s, the trigger event for the demonstrations of 1993 was the decision by the chancellor to reject a proposal to create

a Chicano studies department. Chancellor Young argued that an interdisciplinary "program" would promote Chicano studies across various disciplines. Students, however, saw the matter differently and believed Chicano studies would remain a marginal area of inquiry without the ability to hire and promote its own faculty. When Young chose to announce his decision the same day as the funeral for César Chávez, antagonism among Chicana/o students eventually spilled into the faculty center.

Student response. The initial student response was a march and a sit-in planned to culminate at the UCLA faculty center. The march was organized by a multiracial student group that went by the name of "Conscious Students of Color" and took place on May 11, 1993. However, the sit-in turned into more of a "take-over" resulting in approximately \$40,000 in damages to art work and furnishings. Approximately ninety students and community members were arrested, as the university called in nearly two hundred police officers from Los Angeles and surrounding cities. The following day, some six hundred students rallied in front of the administration building and demanded that charges be dropped against those arrested. Two weeks later, and with much apprehension about the rapidly approaching summer break, Chicana/o student activists launched their most serious effort to date when six students and one faculty member began a hunger strike. The strike lasted a total of 14 days, with negotiations beginning during the second week of the strike.

Organizational outcome(s). The hunger strike, which was the culmination of nearly two years of student efforts to pressure the university, ended with the administration and students agreeing to the development of the César Chávez Center for Interdisciplinary Instruction in Chicana and Chicano Studies. Although the Center was not called a "department," it nonetheless had the crucial ability to hire and promote its own faculty (initially, five faculty lines were granted), which by most standards gave it the authority of a department. Fourteen days after the hunger strike began, a crowd of about four hundred Chicana/o students and community supporters celebrated their victory with chants of "Chicano power!" amidst the waving of Mexican flags.

African American Student Resistance at Rutgers

In January of 1995 three devastating words spoken by Rutgers University President Francis Lawrence were made public. In attempting to explain the university's admission strategy to a group of faculty at the Camden branch in the fall of 1994, Lawrence had made the following remarks: "The average S.A.T. for African Americans is 750. Do we set standards in the future so we don't admit anybody? Or do we deal with a

disadvantaged population that doesn't have that genetic, hereditary background to have a higher average?" At first, none of the faculty in attendance were struck by the president's comments. It was only after a tape of his presentation was replayed nearly three months later, that people took offense. In fact, it was Tuesday, January 31, when *The Star-Ledger* of Newark published a front-page story detailing the comments from President Lawrence based on an audiotape the paper had received from the American Association of University Professors.

To African American students and their multiracial allies (who together formed the "United Student Coalition"), the comments from Lawrence represented the views of a great portion of White America, and the students saw it as their responsibility to educate the larger society as well as the campus community. As a result of the comments, a strong sense of unity was forged. One of the students involved in organizing the demonstrations explained:

It was something seeing all those people pulling together no matter what might happen. We were there because we knew what we had to do. We had that feeling of being together. . . . We were going after what we knew was right. And doing it no matter what. No matter whether President Lawrence apologized or not. Or whether the faculty backed us or not. The students were together. When it came down to it we had to do our work and we did it.

That the response to Lawrence's comments was deeply tied to identity matters was evident in how the students constructed meaning around the rallies and demonstrations following his remarks. One African American student saw the protests at Rutgers as part of the long march by Blacks toward reclaiming their heritage: "I have a theory that Blacks throughout America have an identity crisis. They're searching for an identity. They're in constant struggle to find out who it is they are."

President Lawrence, as one student explained, had touched a deep source of resentment within the African American student community: "Student activists had always been trying to get people to organize. But students didn't really see any reason. He [President Lawrence] gave people a reason to demonstrate, and he made the job of student activists very easy. The day after he made the comments, the day they came out in the paper, there was a mass student meeting and about a thousand students showed up." This student went on to explain that typically student organizers were lucky to get a hundred students to a rally, even after advertising for two weeks.

In addition to the local response, Lawrence's comments and the subsequent calls for his resignation generated a national reaction as well. Prominent conservatives and media figures, such as Carl Rowan and

Alan Dershowitz, came to Lawrence's defense at the same time that organizations such as the NAACP offered financial assistance to a group of student demonstrators arrested for blocking traffic in New Brunswick. A faculty member commented on his perception of the media response:

People in the media and high ranking officials and newspapers closed ranks and supported Lawrence. . . . There was this great desire to turn Lawrence into the victim. Somehow people were beating up on this decent guy. "There those Blacks go again, being unreasonable, outrageous." There was a closing of ranks. A sense that they had to stand together against the radicals out there. The establishment will not act in a way which concedes validity to Black American protests or that empowers Black Americans by acquiescing to their demands. There was a lot of that.

Precipitating event(s). Obviously, the three words uttered by President Lawrence and their publication in *The Star-Ledger* was the singular event triggering major demonstrations at Rutgers. However, feelings of racial discrimination had been felt by African American students at Rutgers for years, as McCormick (1990) pointed out in his analysis of the Black student protest movement at Rutgers: "Their common objective was to compel predominantly white institutions to change their policies and attitudes to accommodate to the needs of a multiracial society" (p. 4). African American students of the 1990s wanted some of the same things that Rutgers students had demonstrated for in the past. Once again, McCormick is helpful: "For African Americans, [their calls for change] meant not only broadening access to higher education; it meant as well the construction of an environment within which they could feel emotionally and physically secure and where their cultural values would be respected and legitimized" (p. 4). Thus, the words uttered by Lawrence were in many ways merely the lightning rod for resentment that had been building over the years. In part, resentment was rooted in the fact that enrollment of African American students at Rutgers had declined over the past decade and a half (from 14% down to 10% in 1994), and the percentage of African American faculty had decreased from only 6% in 1977 to 5.7% in 1993 (Penfield, 1995).

Student response. The day after the publication of text from Lawrence's Camden speech, hundreds of African American students along with a large multiracial contingent of supporters launched a series of major demonstrations as they sought to call national attention to the remarks. In a dramatic form of student demonstration, Jacqueline Williams, a junior at Rutgers, walked onto the basketball court at half-time of the Rutgers-University of Massachusetts Atlantic 10 basketball game in an effort to begin a sit-in and ultimately force the game's post-

ponement. After a few anxious minutes, as completion of the game was postponed and then rescheduled for another date, she was joined by other students and supporters. This event as much as any brought a media deluge to Rutgers and stirred national debate about campus racial climates and the state of racism around the country (Wilson, 1995). For Williams, it was time for African American students at Rutgers to assert themselves, not through violence, but through their minds: "They know we have the power in our fist. They know we can fight. We can stand up to the cops if we have to. . . . But it's time to focus on the fact that we can defeat them not only with the iron fist, but we can also defeat them with our intellect. We can use our brains for this. . . . We have to show them that we are intelligent enough to sit down and talk with them."

Organizational outcome(s). Though student demands for the resignation of President Lawrence ultimately failed, significant institutional commitments to multiculturalism nonetheless resulted. Lawrence would not resign, but he did promise to recommit himself and the university to multicultural reform: "It's something [his comments] I'm going to have to live with. The most positive way to respond is to redouble my efforts and address issues of more minority administrators, faculty, and students. . . . I'm here to learn how we can use this as a learning experience and grow" (Kalita & Simonelli, 1995, p. 1). Perhaps the most significant measure enacted by Lawrence in the aftermath of campus unrest was the formation of a committee of students, faculty, and staff charged with improving the general quality of student life at Rutgers. Several recommendations from this committee eventually were enacted, but to the most strident protesters of the spring of 1995, little had changed in their minds.

American Indian Protests at Michigan State

On the eve of the Republican primary in 1995, a contingent of college students, many of whom attended Michigan State University, participated in a demonstration at the Capitol to pressure Republican Governor John Engler to reconsider his plan to end the state's tuition program for American Indians. The Michigan Indian Tuition Waiver Program (MITWP) had evolved over the years from the Comstock Agreement of 1934—a long-standing agreement between the state and its Indian population in which a school and property in Mt. Pleasant, Michigan were exchanged for free education for American Indians throughout the state. Cognizant of the waiver's history, students held signs reading "Give us the waiver or give us the land" and "Honor your commitment."

From Governor Engler's perspective, although the waiver may have been historically tied to the Comstock Agreement, it was ultimately a

legislative act subject to reversal or reinterpretation like any other form of legislation. Following the conservative rhetoric that helped Proposition 209 pass in California, Engler argued that the MITWP was in effect an "entitlement program" that excluded other underrepresented peoples and therefore should be eliminated. The March 1995 rally at the Capital was only one event in a series of student demonstrations that lasted throughout two consecutive academic years, from 1994 to 1996. In the end, the students were able to fight off the governor's efforts and, for the time being, preserve the tuition waiver.

As in the preceding cases, the battle between Michigan Governor Engler and American Indian students at Michigan State was based on the struggle of a marginalized group to assert a vision of hope amongst people with a common identity. This is revealed in the following comments made by an American Indian student at MSU as he described the feelings of frustration he and others felt in reaction to Engler's initial efforts: "I would say that the attitude was one of hopelessness. Because a lot of people, including myself, were feeling like 'What can we do that would influence their thinking in the Capital?' You know. . . . What kind of contact do they have with students on a daily basis? What do they know about us? Why should they even care about the waiver program or our people's struggles?" And a second student explained her concerns and how she feared for her relatives: "Because I am the oldest grandchild in my family, my cousins look up to me. And the thing is that if they take the waiver away, my cousins will not have a way to go to college. . . . I think most Native people will just feel like college is not for them. College is too much trouble. They don't have the resources without the waiver."

Another student alluded to the positives of attending college and how the struggle with the governor was rooted in a deep commitment to American Indian heritage:

I know that in college you come of age and stand up more. . . . In college you start thinking more critically about the issues that are affecting your people. Like you start to realize why things are bad in your community. You start to see maybe an historical basis for it. Then you stop to realize and you start to stand up a little bit more. . . . I think that a lot of Native students our age are getting back more to their roots, as far as the language and the culture. . . . My parents and grandparents were forbidden to speak their language. Boarding schools were designed to take the Indian out of the Indian—and assimilate and things like that. . . . Today's generation of Indians is working to reclaim our roots, our heritage.

This student went on to add that he saw the fight with Engler as part of standing up for Indian culture and identity and that the climate in the

mid-1900s up until maybe the 1960s was that Indians should all be assimilated. "So I kind of think that things are looking up for us as far as going back to traditional roots. . . . We need a foundation. Otherwise we are just kind of lost in American society. Half of us have no sense of our tradition. . . . We need to push to reclaim our heritage and our identity."

Precipitating event(s). The precipitating event arousing American Indian students at Michigan State was Governor Engler's efforts to end the Michigan Indian Tuition Waiver Program. Of course, his efforts were arguably tied to a larger national movement to curtail what many conservatives saw as "entitlement" programs that favored one minority group over the majority, as well as over other minority groups. In fact, Engler defended his actions by arguing that the tuition waiver program for Michigan Indians was unfair to other minority groups who might lack the financial wherewithal to attend college.

Student response. As early as the academic year 1993-94, Governor Engler had sent notice that the tuition waiver program was in trouble. Students in MSU's North American Indian Student Organization (NAISO) were slow to respond at first, but soon they gathered momentum as the fall semester progressed. In the spring of 1994, NAISO participated in its first major protest when approximately one hundred and fifty students and supporters marched across campus and through the main administration building. This initial demonstration was designed to call attention to NAISO's concern about the threat to the waiver and to foster support among fellow students and faculty. The second demonstration was the March 1995 rally at the capital. In the fall of 1995 NAISO launched its third major demonstration as the students targeted Governor Engler's speech to be given as part of Michigan State's homecoming parade. The speech was eventually canceled, for American Indian students and Chicana/o student allies from MEChA carried signs and chanted slogans that proved too disruptive for the governor.

Six days after the homecoming protest a group of about thirty students and staff dressed in black gathered at the center of campus to commemorate Columbus Day. One by one the demonstrators spoke about the despair that the day had come to signify in their lives and the lives of other American Indians. One student commented, "This is not a celebration day for us. We have always been here and we resent the idea of discovery and the myth of the virgin land." This student went on to explain that it was offensive to her that the indigenous peoples of North America were misnamed "Indians." She went on to point out that the proper name for her ancestry is "Anishinabe," meaning the "original people." What angered so many gathered on this day was that the history of Michigan

Natives remains unknown to most students around the state and yet Christopher Columbus getting lost in North America is a national day of remembrance.

Organizational outcome(s). In time, Governor Engler reluctantly let go of his desire to end the program, and the tuition waiver was rarely mentioned by him over the academic years 1996–97 and 1997–98. Though many of the students in NAISO seemed relieved, they knew in the back of their minds that the issue could resurface again. Thus, two years later, Lula Brewer, who had played a key role in organizing NAISO's response, felt good that she had invested in the struggle and could look back fondly and say that at least she tried. Brewer believed the demonstrations had an impact because she heard students around campus talking about the concerns of American Indian students. By her thinking, NAISO had succeeded in raising student awareness and understanding of the tuition waiver and ultimately had gained enough support to resist Engler's efforts.

Discussion

That the cases of student unrest presented in this article were fundamentally linked to issues of multiculturalism and identity struggle was most apparent in the manner in which students constructed meaning around their involvement. The Mills College strike was linked to broad concerns tied to women's educational opportunities. Likewise, gay liberation activities at Penn State were linked to the larger struggle for equal rights for lesbian, gay, and bisexual people throughout the country, as was most evident by the students' participation in the 1993 march on Washington. And, for Chicanas/os at UCLA, African Americans at Rutgers, and American Indians at Michigan State, racial identity and the larger struggle for equality was centermost in the way the students constructed meaning around their demonstrations.

For Khai Harley, the spring of 1995 was a period in his life when his identity as an African American took on central importance. Harley was one of the students who helped to organize African American resistance at Rutgers University, and he hoped that the protests at Rutgers would contribute to a national movement among college students to create social change. "I believe that the student protests because they gained national exposure may provide students across the country a sense of responsibility and a sense of hope. I believe it [the movement at Rutgers] may have encouraged a lot of students to stand up and do something about the situations that they're faced with. The level of emotion that existed at Rutgers during this whole event could spread across the entire

country, to other campuses and other universities." Harley went on to add: "The average student doesn't realize the power and the impact that they have on the university and what they can get accomplished if they show a collective effort. . . . The comments by President Lawrence lent an immediate sense of unity and a sense of solidarity and strength."

Whether the actions of students at Rutgers and students at other schools such as Mills College and UCLA served as catalysts for increased student activism is unclear. What is clear, however, is that across the country the 1990s evidenced a renewed commitment by students to educational equity at the same time that conservative forces won battles to eliminate programs such as affirmative action. The protests in 1996 and 1997 by college students in California in response to the passage of Propositions 187 and 209, and in Texas in response to the Hopwood decision are telling examples. When an irresistible force meets an immovable object, tension is bound to result.

"Martyrs for Multiculturalism" was the *Newsweek* headline that went on to describe the case of UCLA and Chicano Studies (Leslie & Murr, 1993). The article was one of the first to link a series of student demonstrations to a larger social movement organized around multiculturalism and often enacted through identity politics. The case studies and argument presented in this article also support the notion that a significant cultural movement has been taking place on U.S. campuses during the 1990s. The movement, which elsewhere I term the "multicultural student movement," may be seen as an extension of the civil rights initiatives of the 1960s, although the contemporary movement is perhaps more culturally diffuse (Rhoads, 1998).

When we give serious thought to these matters, it should come as no surprise that college and university settings highlight so much of the cultural tension inherent in the larger society. After all, because education plays a key role in fostering and enhancing a democratic citizenry, it is logical that many of the social tensions of the democratic project will get played out in campus life. As Sidel argued, "The educational system is . . . of central importance in determining who will be able to participate fully and meaningfully in our democratic society" (1994, p. 25). And Dey (1997) noted that the socialization of college students takes place within a context that is highly influenced by larger social issues.

Although race, gender, and sexual orientation were fundamental matters students considered in their struggle for equal rights and educational opportunity, this is not to say that students only thought of themselves as "womyn," "queer" or "Chicano." I need to be clear here. I am not saying that African American students defined their identity solely on the basis of their racial heritage, or that women at Mills College only thought of

themselves in terms of their gender, or that gay students at Penn State singularly framed their lives in reference to their sexual orientation. Students bring complex and multiplicitous meanings to the identities they construct. Because the focus of this article is on the broader web of meaning connecting these students—multiculturalism and the use of identity politics—capturing the multiplicity of individual identities was not possible. Of course, one's identity is never simply the byproduct of race, gender, or sexual orientation, but there certainly are times when these aspects become more psychologically salient to one's sense of self, especially for members of marginalized groups, as Goffman's (1963) work on stigma revealed.

But what of the charge that student activists of the 1990s invest so heavily in a particularized identity that there is little room for, as Gitlin (1995) writes, "a commons"? Again, the evidence from this study provides a compelling refutation. Although the five movements discussed in this article focused primarily on specific campuses, they all took on a multicultural tenor as various groups came to the support of the students' cause. At UCLA a leading group in challenging the administration was the Conscious Students of Color, a multiracial student group organized to advance Chicano studies. At Penn State, while the Lesbian, Gay, and Bisexual Student Alliance led gay liberation efforts, they were also supported by the Black Caucus, the Graduate Student Association, the Interfraternity Council, and the Commission for Women. At Rutgers University, a multiracial coalition emerged in the form of the United Student Coalition. At Michigan State University, American Indians and Chicana/o students entered into solidarity and together organized campus demonstrations. And the women of Mills College found supporters among fellow students and alumnae across racial and sexual orientation lines.

With other campus movements, a collective identity organized around multiculturalism also has been evident. Efforts on the part of Asian American students at the University of Maryland to create an Asian American studies program in 1995 involved students from various groups, including African Americans, Jews, women, and gays. In 1996, at SUNY Binghamton, a diverse student coalition organized in response to anti-affirmative action initiatives by the conservative student government president. The Binghamton Coalition represented a multiracial movement involving underrepresented minority students as well as progressive Whites. Demonstrations at Indiana University on the Martin Luther King, Jr. holiday in 1997 were led by a multiracial coalition which demanded increased institutional commitment to diversity. During protests at the University of Massachusetts at Amherst in the spring

of 1997, which included the takeover of the controller's office by three hundred students, protestors were joined by groups of students from Smith, Amherst, Hampshire, and Mount Holyoke colleges in what was a multiracial contingent seeking multicultural change.

Criticism that student identity politics has contributed to "tribal isolationism" simply does not hold water when one explores the various multicultural movements around the country, which, for the most part, are highly multiracial and multifarious. The notion that African Americans, Chicanos, American Indians, or gays are somehow isolating themselves from others as a result of separatist philosophies does not hold up when put to close scrutiny.

The multicultural tenor of contemporary student activism has significant implications for how we think about higher education and the role of students as reformers. Clearly, the cultural crises so paramount during the 1960s is far from resolved. A message is being sent by contemporary students to college and university faculty, administrators, and policy makers: There is much lacking in the curricular and organizational structures that are supposedly intended to serve a democratic society. Those of us heavily involved and invested in higher education ought to pay heed to this message and interact with student activists through serious-minded dialogues without being too quick to dismiss their passionate stances. When students are willing to risk their lives in order that they can take courses that speak to their cultural experiences, it is wise to listen to the serious commitment such actions convey. Is not this kind of passion an expression of involvement in learning?

Democracy is the great American project that gets played out in various organizational contexts, and colleges and universities certainly are not immune to democratic struggle. To a degree, the 1990s have witnessed a return to campus unrest, as students have once again turned their energy to protest as a means to disrupt authority and challenge what they perceive as institutional inequities. The issues faced by policymakers involve more than simply answering the question: How should we respond to student organizing and demonstration? Instead, we ought to ask a bigger question: Are there fundamental flaws with the structure of higher education to which the multicultural student movement speaks?

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Merging in a Seamless Blend

How Faculty Integrate Teaching and Research

By continuing the research tradition of looking at faculty in the same fragmented way, we are sustaining the view that their work activities are not integrated and leaving open the door to the academic debate that the work they do conflicts with the needs of students and the expectations of the public. (Ludwig, 1996, pp. 74–75)

The way faculty allocate time to their teaching and research roles is the focus of much debate as higher education policy-makers and administrators seek to improve faculty productivity (Jacobson, 1992; Mingle, 1993). Many states require faculty to report the time they spend accomplishing teaching, research, and other goals; several states have enacted substantive measures designed to change the way faculty allocate their time (Hines & Higham, 1996). Policy decisions about faculty work, however, may be hindered by inadequate information about the ways faculty actually spend time engaged in teaching and research (Ludwig, 1996).

Many scholars and administrators believe that the achievement of teaching and research goals requires faculty to engage in separate and distinct activities (Barnett, 1992). In this view, faculty teaching and research roles are always *fragmented*; the time that faculty spend accomplishing research goals is necessarily time that faculty are not achieving teaching goals (Massy & Zemsky, 1994). In contrast, some scholars and policy analysts assert that faculty members' teaching and research roles do not always involve separate and distinct uses of time. Clark's interviews with college and university faculty, for example, reveal that professors find their own teaching and research activities "merging in a

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seamless blend" (Clark, 1987, p. 70). In other words, faculty sometimes jointly produce teaching and research (Layzell, 1996; Romney, 1971). In this view, faculty teaching and research roles are sometimes *integrated*: faculty occasionally engage in activities that accomplish teaching and research goals at the same time.

Prior research shows that joint production of teaching and research can be efficient and cost effective for colleges and universities (Hopkins, 1990; Cohn, Rhine, & Santos, 1989). Similarly, faculty may improve their efficiency if they sometimes allocate time to activities that achieve both teaching and research goals (Becker, 1975). To illustrate, a faculty member might spend two hours reading source material and drafting notes for a paper she will present at an upcoming conference, then spend another two hours reading additional materials and writing the outline for her afternoon undergraduate lecture course. In this example, the faculty member's research and teaching efforts are fragmented, and the activities required to accomplish both goals take four hours. The same faculty member might spend two hours reading source material and drafting notes that she will use for both the conference paper and the undergraduate lecture. In the second example, the faculty member integrates teaching and research, and the activities required to accomplish both goals take only two hours. Efficiency is improved because both goals have been accomplished. By integrating teaching and research, the faculty member has two additional hours to accomplish other goals.¹

Although many studies have been conducted about faculty work, there is little evidence about the ways or the extent to which faculty integrate teaching and research. Indeed, most existing studies assume faculty work roles are always fragmented. Faculty workload studies, for example, ask faculty to estimate the time they allocate to teaching, research, service, and administrative goals separately (Yuker, 1984; Jordan, 1994). Because the categories are predefined as mutually exclusive, faculty members' reports necessarily indicate that whenever faculty are doing research, they are not teaching.

Similarly, investigators who explored whether faculty teaching and research roles are complementary or conflicting have not explored the extent to which faculty engage in teaching and research activities at the same time. Instead, previous faculty role conflict studies have operationalized faculty teaching and research roles in terms of performance outcome measures—usually student evaluations of teaching and publication counts. Meta-analyses of such studies found little relationship—positive or negative—between teaching and research outcome measures (Braxton, 1996; Feldman, 1987; Hattie & March, 1996). The time faculty report spending

on teaching and research activities, however, is a poor predictor of teaching and research outcomes. Studies that explored the relation of faculty time allocation to teaching and research outcomes found that time faculty reported teaching had no influence on teaching outcomes and only a small negative effect on research outcomes. Similarly, time faculty reported doing research had only a small positive effect on numbers of publications and little effect on teaching evaluations (Feldman, 1987; Fox, 1992; Hattie & Marsh, 1996). Individual factors (such as ability and motivation) and contextual factors (such as available resources, disciplinary norms, and students' and editors' behavior) are likely to mediate between the amount of time faculty spend on teaching or research and the outcomes measured by student evaluations and publication counts.

Thus, even though scholars, policymakers, and administrators are concerned with whether research interferes with teaching, little systematic evidence is available about the ways and the extent to which the time faculty spend on research is also time that faculty spend teaching. This study explored teaching-research integration by seeking answers to the following questions: (1) For what proportion of their work time do faculty accomplish teaching and research goals simultaneously? (2) What kinds of faculty activities are most likely to include integration of teaching and research? (3) How do university, departmental, and disciplinary contexts influence the ways and the extent to which faculty integrate teaching and research?

Relevant Theory and Prior Research

Social role theory provides a theoretical framework for understanding how faculty might integrate teaching and research. A role can be defined as the set of behaviors that belong to a specific office or position (Sarbin & Allen, 1968). An individual in a single position can perform multiple roles (Katz & Kahn, 1966). Faculty, for example, have traditionally been described as performing teaching, research, and service roles. Role expectations anticipate how individuals performing a specific role are supposed to behave. One's actual role behaviors, however, may not necessarily conform to one's own or others' expectations for that role (Secord & Backman, 1974). Individuals experience role strain when they are confronted with conflicting or competing expectations. Role conflict arises when one role expectation is incompatible with another role expectation. Role competition happens when an individual cannot meet two expectations because of limited time (Secord & Backman, 1974).

Marks (1977) questioned whether time to fulfill multiple roles is inevitably limited. He asserted that traditional role theory has been grounded in metaphors which suggest that performing a role must result in a net loss of time and energy. Plumbing and economic metaphors used in role theories suggest that time and energy "drain away," "dribble," or "leak out," or that they are "consumed," "spent," "invested," and "saved," as individuals perform roles. According to this economic *scarcity* perspective, the time a faculty member consumes when conducting research is no longer available to invest in teaching.

Many empirical studies of role conflict reveal, however, that a sizable minority of individuals who perform multiple roles do not feel drained of time and energy (Marks, 1977). Therefore, Marks proposed an *expansion* perspective to improve understanding about the conditions under which individuals perform multiple roles without net energy loss. He suggested that one way individuals may make time to fulfill multiple roles is by doing two or more things at once (Marks, 1977). Similarly, Turner (1962) proposed that individuals might reduce role strain by merging two apparently conflicting or competing roles. Applying this expansion or merger perspective to academic work, faculty members might expand available time and energy by engaging in behaviors that simultaneously satisfy expectations for both research and teaching roles.

Faculty members' opportunities to integrate teaching and research, however, are likely to vary with the relative compatibility of expectations for the two roles and the rigor with which expectations for the two roles are defined (Getzels & Guba, 1954; Secord & Backman, 1974). Work role expectations are defined by the contexts within which individuals perform their roles (Katz & Kahn, 1966). Faculty face expectations from two work contexts about how to accomplish teaching and research goals: the organizational contexts of their colleges and universities and the professional contexts of their disciplines (Clark, 1983). Faculty who work in institutions or disciplines that rigorously define faculty roles might have fewer opportunities to integrate teaching and research than faculty who work in institutions or disciplines that have less rigid or clearly defined role expectations.

Prior research has shown that faculty behavior is less likely to be controlled by formal bureaucratic rules in research universities than in comprehensive universities (Baldrige, Curtis, Ecker, & Riley, 1978; Clark, 1987). In research universities, faculty tend to be treated like professionals who set their own work agendas and participate in setting organizational direction and purpose (Finkelstein, 1984). In comprehensive universities, faculty are treated more like employees and are therefore held

more accountable for expected work than research university faculty (Clark, 1987). In addition, faculty in comprehensive universities are more likely to be unionized than their counterparts in research universities. Collective bargaining agreements may contribute to the documentation and standardization of faculty work (Baldrige, et al., 1978). Faculty in comprehensive universities may face more rigidly defined and differentiated expectations for their teaching and research roles than their counterparts in research universities. As a result, comprehensive university faculty may find fewer opportunities than research university faculty to integrate teaching and research.

Disciplines vary in the degree to which there is consensus about paradigms. Paradigms are defined as the theories, methodologies, techniques, and problems addressed within a discipline (Braxton & Hargens, 1996; Lodahl & Gordon, 1972). The degree of paradigm consensus influences social relations among faculty and expectations for faculty behavior within a discipline (Becher, 1989). In high paradigm consensus or "hard" disciplines, knowledge is perceived as cumulative and concerned with universals, quantification, and discovery (Becher, 1989; Biglan, 1973). Hard disciplines are characterized by widespread agreement about curriculum content, research collaboration, competition for recognition and funding, clearly defined intellectual boundaries, and gatekeeping of those boundaries by a powerful elite (Becher, 1989; Lodahl & Gordon, 1972). In contrast, low paradigm consensus or "soft" disciplines consider knowledge as recursive; scholars use new lenses to explore intellectual territory already mapped by others. Knowledge is also concerned with particulars, qualities, and understanding (Becher, 1989; Biglan, 1973). Soft disciplines are characterized by idiosyncratic curricula, weak boundaries, independent research efforts, and tolerance for unusual ideas or methods (Becher, 1989; Biglan, 1973). The knowledge and social structures of hard disciplines appear to define faculty work behavior more rigorously than the knowledge and social structures of soft disciplines. Faculty in hard disciplines, therefore, may have fewer opportunities to integrate teaching and research than faculty in soft disciplines.

Other elements of university and disciplinary contexts may also enhance or constrain faculty opportunities to integrate teaching and research. Previous studies show that availability of resources (Martin, Schermerhorn, & Larson, 1989), co-workers' values (Scott, 1998) and communication patterns (Maehr & Braskamp, 1986) influence individual work performance. This study explored how governance structures, paradigm consensus, policies, resources, communication patterns, and

colleagues' values influenced the ways and the extent to which faculty integrated teaching and research.

Methods

Because there is so little systematic information about how faculty integrate teaching and research or the contextual conditions that enhance or constrain integration, this exploratory study used a research design that included direct observation of faculty activities and interviews with faculty and administrators. To explore how university and disciplinary contexts influence teaching-research integration, I observed faculty work in four departments selected for university and disciplinary variation. Faculty were deeply involved in professional governance at Vantage University, an elite research university. In contrast, the unionized faculty at Cosmopolitan State perceived a great distance between themselves and the administrators of their public comprehensive university.² (Institution and faculty names are pseudonyms.) At Vantage and Cosmopolitan State universities, I observed faculty at work in physics, a "hard" or high consensus discipline, and in English, a "soft" or low consensus discipline (Biglan, 1973; Braxton & Hargens, 1996).

Observations of Integration

Using methods developed by Mintzberg (1973) to analyze managerial work, I conducted structured observations of a purposive sample of twelve faculty members: three faculty in each of the four departments. All were white male full professors nominated by their chairs as being excellent at both teaching and research.³ I observed the work of each professor on five non-consecutive work days, for a total of 60 days (442.5 hours) for all twelve. Observations of each faculty member occurred across days of the week; across beginning, middle, and end of terms; and across more than one term. On observation days, I interviewed participating faculty members to obtain specific and fresh information about confidential meetings and work activities accomplished at home, after regular working hours, or off-campus the previous day or weekend. The data include records of 587.2 hours of immediately reported activities.⁴

During the observations, I recorded the duration of each faculty activity.⁵ Activities were the tasks actually performed by faculty members and involved three factors: (1) the academic *goals* that were accomplished by doing the activity, (2) the specific *action* performed, and (3) the actual *allocation of time* to one or more purposes and actions (Mintzberg, 1973). Goals of faculty work included teaching, research,

administration, and service. Actions were the specific tasks performed that accomplished one or more goals. Teaching actions included classroom instruction, class preparation, informal instruction, advising, developing new courses, grading, and participating in meetings about teaching (Braskamp & Ory, 1994; Yunker, 1984). Research action categories included conducting inquiry (investigating or developing new knowledge), scholarship (engaging in tasks that contribute to professional development or general expertise in one's field), working on logistics (tasks that indirectly support inquiry), writing, presenting, and doing grant work (Braskamp & Ory, 1994; Creswell, 1985; Yunker, 1984).

A total of 4049 activities were recorded in an EXCEL data base with fields for the time each activity began, the duration in minutes, the goal(s) served, the action(s) taken, and whether the activity was reported or observed. I coded activities that fulfilled more than one goal for all appropriate goals. Goals were determined from professors' own descriptions, or from evidence in the verbal, temporal, or physical context of the activity. I coded research and teaching integration conservatively: research was coded as integrated with teaching only when the activity involved the faculty member's current research or when he used research in his teaching that had been completed within the previous year.

To analyze ways and the extent to which each faculty member integrated teaching and research, I calculated the proportion of total reported time that the faculty member allocated to each goal and action of work. I analyzed the extent to which each faculty member integrated teaching and research, and what kinds of actions occurred during the periods of integration. I then compared similarities and differences in patterns of integration across disciplines and universities.

Interviews about Contexts

To obtain information about university and disciplinary contexts, I interviewed the observed faculty ($N = 12$), four to five of their faculty colleagues ($N = 18$), the chairs and deans in each of the four departments ($N = 9$). Faculty and administrators shared their perceptions of how their university and disciplinary contexts affected the work activities of all faculty in their department and their own work in particular. The interview guides included questions such as: "What resources are available at [university] to help faculty accomplish [teaching/research] goals?" "How do formal policies at [university] affect work done by faculty?" "What are the activities valued [most/least] at [university]? How do you know?" and "How do [discipline] professors communicate with each other within and across university boundaries?"

Data Analysis

I followed guidelines suggested by Miles & Huberman (1984), Strauss (1987), and Yin (1989) to analyze faculty members' and administrators' perceptions of how contexts influenced faculty work. When coding interview transcripts, each time an informant described a support or constraint of faculty work, I tabulated: the context from which the support or constraint originated (university or discipline), the goal(s) of work supported or constrained (teaching, research, or a combination), the means by which the faculty member perceived the support or constraint, and the attitudinal or described behavioral response to the support or constraint. I conducted a within-case analysis of each department, looking for supports and constraints that were salient to most of the faculty and administrators in each department sample. A cross-case analysis revealed similarities and differences in elements of contexts across the two disciplines and the two universities. Finally, I related data from interviews about contextual influences on integration with the various ways that faculty integrated teaching and research.

Contextual Influences on Teaching-Research Integration

The English and physics faculty whose work I observed at Vantage and Cosmopolitan State Universities integrated teaching and research between 8% and 34% of their total time recorded for this study. The mean proportion of integrated teaching and research time for the sample of twelve faculty was 19%. The sample of twelve faculty is too small to generalize findings about the extent of teaching-research integration to larger populations of faculty in their departments, universities or disciplines. That does not affect the power of this study, however, to identify the types of teaching and research activities most likely to be integrated and the characteristics of contexts that enhance or constrain such integration. Patterns that emerged from comparing and contrasting activities and contexts suggest that the nature and opportunities for teaching-research integration differ according to the purpose of the teaching effort, disciplinary paradigm consensus, disciplinary norms for training students to conduct research, university evaluation and reward policies, and faculty involvement in decision making.

Purpose of Teaching

Scholars and institutional researchers usually categorize faculty members' teaching according to the level of students taught: undergraduate or graduate. This study revealed, however, that the ways faculty integrated

teaching and research was influenced less by the level of students taught than by whether the purpose of their teaching efforts was classroom instruction or training students to conduct research. Classroom-oriented teaching activities involved conveying knowledge and skills in regularly scheduled courses to students of all levels from freshmen to advanced graduate students. Research training activities involved empowering undergraduate and graduate students to pursue independent inquiry according to disciplinary standards. Table 1 shows the proportion of total time recorded for this study that faculty integrated classroom-oriented teaching and research, research training and research, and all teaching with research.

Classroom-oriented teaching actions were similar in both English and physics departments at both universities, whether faculty were teaching undergraduate, master's, or doctoral students. These actions included formal teaching during scheduled class hours, class preparation, informal out-of-class teaching about course-related material with one or more students, advising, course development, grading, and informal and formal meetings with colleagues or teaching assistants about scheduled courses. Faculty were more likely to integrate classroom-oriented teaching with research when their teaching actions involved formal teaching, preparation, and course development and when their research actions involved presentation, inquiry, or scholarship. For example, Vantage English professor Jim Gabriel prepared for a class composed of graduate

TABLE 1
Proportion of Time Faculty Integrated Teaching and Research

Institution/ Name	Classroom Teaching w/Research	Research Training w/Research	All Teaching w/Research
<i>Cosmopolitan Physics</i>			
Hank Powell	2	9	11
Gary Byrne	34	0	34
Ryan Neumann	0	8	8
<i>Cosmopolitan English</i>			
Aaron Chase	17	2	19
Darryl Allen	24	0	24
Mike Easton	15	1	16
<i>Vantage Physics</i>			
Sam Youngman	14	19	33
Paul Zepeda	3	25	28
Ted Klein	0	11	11
<i>Vantage English</i>			
Rich Jeffers	16	1	17
Jim Gabriel	8	0	8
Blake Saxon	14	9	14

and undergraduate students by reading a manuscript that he was reviewing for a publisher on a topic related to his current research. Jim opened class discussion that day by reading several pages from the manuscript to the class. He pointed out several of the intriguing arguments made in the manuscript and used them to stimulate class discussion.

Research training actions were similar in both disciplines at Vantage and Cosmopolitan State Universities, whether the students involved were undergraduates, master's, or doctoral students. When faculty trained students to conduct research, teaching actions often involved informal instruction or formal meetings with research teams. Integration of research and research training occurred most often when faculty members' research actions involved inquiry (investigating or developing new knowledge) or working on logistics (such as procuring source texts or making a list of parts needed to build experimental equipment.) For example, much of theoretical physicist Sam Youngman's teaching efforts at Vantage consisted of exploring ideas with students. Sam and one or more graduate and undergraduate students would discuss concepts and work through mathematical analyses of theoretical alternatives. During discussions that might last two hours, students came and went to attend classes or to other responsibilities; Sam would continue developing theory with whoever was available. The purpose of faculty members' teaching efforts interacted with elements of their disciplinary and university contexts to shape the ways and the extent to which they integrated teaching and research.

Disciplinary Paradigm Consensus and Knowledge Structures

Disciplinary differences in paradigm consensus and knowledge structures provided English faculty with more opportunities than physics faculty to integrate research with classroom-oriented teaching. English faculty described research in their discipline as understanding the complexity of particular written works. Interviews conducted for this study confirmed earlier research findings (Biglan, 1973; Becher, 1989) that faculty in soft disciplines disagree about which texts should be studied, and about the theories or methods by which the texts should be interpreted. Consequently, knowledge expands horizontally in English; new developments are added alongside existing research traditions. I observed that the flat and expansive nature of knowledge development made it relatively easy for English faculty to teach their current research to undergraduate as well as graduate students. In addition, lack of consensus about appropriate curriculum and course content gave English faculty flexibility to design courses related to their research. According to Cosmopolitan State English professor Aaron Chase:

We have very few titles for classes here. The class title is the same, for instance, "The Theory of Literature." But under that umbrella, the possibilities are endless, and individual instructors will conceive that class with a tremendous degree of variability. That's one of the things that I think people like about here. Here we teach too much, but what we teach is able to bear a strong personal imprint.

Jim Gabriel described a similar flexibility in course design in the Vantage English department. He said, "The wonderful thing about Vantage is that you can teach—provided that you can get people interested in it and get enough people—you can teach what you're working on. . . . I certainly find that is the best teaching I do." English faculty integrated their research with class preparation and instruction for undergraduate as well as graduate courses. Rich Jeffers, Jim Gabriel, Blake Saxon, and Mike Easton used materials for teaching undergraduate or graduate courses that they were also reading and analyzing for books they were writing. Cosmopolitan English professors Darryl Allen and Aaron Chase taught undergraduate literature courses that dealt with themes or language similar to the themes and language the professors wrote about in their fiction.

In contrast, the physicists with whom I spoke described their discipline as having a high level of agreement about content and method, confirming prior research that faculty in hard disciplines agree about "accepted knowledge" in their fields (Lodahl & Gordon, 1972). They also told me that the cumulative and hierarchical knowledge structure of physics required students to master fundamental concepts and methods before progressing to the next level of understanding. Most undergraduate students and many beginning graduate students were unlikely to understand the details of a faculty member's frontier-level research. As a result, most of the physics faculty I observed found it difficult to integrate their research with their classroom-oriented teaching. Five of the six physicists I observed were conducting research at or near the frontiers of knowledge in their specialties. In undergraduate and many graduate classes, however, they were teaching students the fundamental principles of the discipline. A Vantage physicist said that physics is "so hierarchical that you get locked into this and you have to cover this and you have to cover this, and this, and this. There's just no time . . . to develop things that are a little out of the mainstream." As will be discussed in subsequent sections, university and departmental policies moderated the disciplinary influences, however, providing opportunities for some physicists to integrate classroom instruction with their research.

Role theory suggests that the more rigorously expectations for two roles are defined, the less likely individuals will be able to integrate the two roles (Secord & Backman, 1974). My observations and interviews

revealed that high levels of paradigm consensus in physics did indeed define both classroom-oriented teaching and research roles more clearly than low levels of paradigm consensus in English. Widespread agreement about course content and teaching methods rigorously defined physicists' classroom-oriented teaching actions. Moreover, the hierarchical structure of knowledge in physics dictated that physics researchers pursue inquiry at a level of understanding beyond the understanding of all but the most advanced students in the classroom. In contrast, low paradigm consensus gave English faculty more latitude to design the content and methods of their courses. The horizontal structure of knowledge in English allowed faculty to pursue research across a broad array of topics that students in all levels of collegiate courses understood. These findings lead to the empirically grounded Proposition 1, testable with larger populations: *Faculty in low paradigm consensus fields integrate classroom-oriented teaching with research more than faculty in high paradigm consensus fields.*

Disciplinary Norms for Research Training

Normative expectations for faculty members' research training roles provided physicists with more opportunities than English faculty to integrate research with training students to conduct research. Physicists integrated research and teaching as they worked alongside undergraduate and graduate research apprentices. Physics faculty perceived the process of exploring physical reality as something that could be enhanced by sharing and subdividing experimental tasks. Paul Zepeda scheduled weekly meetings with his six-person student research group. He also often conducted experiments or analyzed data alongside students in the lab. Hank Powell frequently worked with one or more students, perhaps writing code on one computer while a graduate student performed calculations on another computer and an undergraduate read articles relevant to the project. When a physicist reviewed a research student's paper, the paper usually contributed to the professor's research project, and the professor was a coauthor. The norm for collaborative research training prevailed in physics even when the work could not be easily subdivided. Vantage physicist Sam Youngman and his undergraduate and graduate apprentices worked together on the conceptual development of holistic theoretical problems.

In contrast, English faculty counseled individual undergraduate and graduate research students about the students' work. English students' research efforts seldom contributed directly to faculty research. English professors talked about research as personal involvement with literary texts or with their own lived experience. Most used the word "engagement" when discussing their strengths as researchers. English faculty

felt that this sense of personal engagement was something that individuals must discover for themselves. Professors could model, demonstrate, and encourage students, but not participate in the process with students. As Vantage English professor Jim Gabriel said, "I try to point out the beauties, the complexities, and joys that exist in [literature]. And I try to engage the students in their own interactions and reading which produce exciting new meaning for them. I hope." In their one-on-one meetings with students, English faculty asked facilitating questions, offered information about references, made suggestions for content and structure of theses, and counseled students on career and personal issues related to the topic or the conduct of the student's research. Then faculty sought time and office space away from students to engage their own writing efforts. The norm for training by individual counseling prevailed among the faculty I observed and their department colleagues despite evidence that some English faculty use a master-apprentice model elsewhere. Vantage English professor Blake Saxon told me that some of his disciplinary colleagues in Europe subdivided research tasks with student apprentices. He acknowledged that he might produce more research if he followed their model, but added, "That might be nice, but I like doing a lot of the work myself."

My observations confirmed results of previous studies, showing that faculty in hard disciplines are more likely to engage in research collaborations with peers and students than faculty in soft disciplines (Becher, 1989). I observed that physicists taught students how to conduct research according to a master-apprentice model while English faculty used a counselor model. Scholars have theorized these differences occur because researchers in hard disciplines, such as physics, investigate subdividable problems, whereas researchers in soft disciplines, such as English, explore holistic issues (Lodahl & Gordon, 1972; Becher, 1989). I found, however, that physicists may work together with students on holistic problems and that it is possible for English faculty to subdivide tasks among members of a research team. Thus, the contrasting methods of research training in physics and English did not appear to be a natural consequence of disciplinary paradigm consensus or knowledge structures, but of taken-for-granted social norms within each discipline. Whatever the cause, role expectations for research training appeared to be defined with equal rigor in both disciplines. Role compatibility, however, differed between physics and English. The master-apprentice model for research training was compatible with physicists' role expectations for conducting one's own research. In contrast, the English counselor model for research training was incompatible with disciplinary role expectations for conducting one's own research. This finding is

consistent with role theory that opportunities for integrating two roles will vary with compatibility of role expectations (Secord & Backman, 1974), and leads to the empirically grounded Proposition 2: *Faculty who use a master-apprentice model to teach students how to conduct research will integrate research and research training more than faculty who use a counselor model to teach students how to conduct research.* Furthermore, because of disciplinary social norms, faculty in hard disciplines are more likely to use a master-apprentice model, and faculty in soft disciplines are more likely to use a counselor model for research training.

University Research Evaluation Policies

University policies for evaluating faculty research provided Cosmopolitan State faculty with more opportunities than their Vantage University colleagues to integrate classroom-oriented teaching with research. Cosmopolitan State University standards for what counted as valuable research were more specific but also more broad than Vantage University standards. The Cosmopolitan State faculty handbook listed fourteen specific categories of "Research, Creative, and Professional Activities." The list began with "articles or creative work published in refereed professional or trade journals," but also included textbooks, newsletter articles, and creative works published in popular media. Thus, the Cosmopolitan State policy suggested that a range of activities, even those that might not be considered frontier-level research within a discipline, should be considered when evaluating the professional work of faculty. In contrast, the Vantage University faculty handbook section about evaluating research for promotion, tenure, and salary focused not on *what* should be included in faculty research evaluation but on *how* a professors' publications should be evaluated: "The evaluation will normally include outside evaluation of the candidate in comparison with the very best persons in his or her field at the same level of professional development." Thus, the Vantage University faculty knew they were expected to produce research that would be considered among the best by other leaders in their disciplines. The difference in university policies had more potential to influence integration of research and classroom-oriented teaching for physicists than for English professors. As described earlier, low levels of disciplinary paradigm consensus and horizontal knowledge structures facilitated such integration for English faculty at both universities.

Contrasting experiences of physicists at the two universities illustrate the impact of the differing research evaluation policies on physicists' opportunities to integrate classroom-oriented teaching. Cosmopolitan physicist Gary Byrne integrated classroom teaching and research more

than any faculty I observed. Gary's research involved writing an introductory physics textbook incorporating new pedagogical techniques. The textbook evolved from Gary's experiences teaching introductory physics to Cosmopolitan State's diverse student population course every term. Even though high duplicating costs prevented Gary from distributing copies of the draft for students' use, his lectures often included explanations that had been carefully crafted for the textbook. In contrast, Vantage physicists faced university-reinforced disciplinary expectations that research should involve developing new knowledge. Paul Zepeda found that meeting such expectations left little time for synthesizing existing physics knowledge in textbooks or educational materials. Paul showed me a text for a computer-aided physics course he had written three years previously. He had enjoyed writing the text and continued to receive many inquiries from faculty at other universities about it. Although he had been asked to write a sequel, Paul would not; he knew his department colleagues would not recognize the value of such a project.

Although role expectations for research were defined with more clarity and specificity at Cosmopolitan State than at Vantage University, Cosmopolitan State standards actually recognized a broader range of activities as counting for faculty research. Vantage University policies were nonspecific, but they effectively constrained faculty research activities to fit each discipline's definition of excellence. In 1990 Carnegie Foundation president Ernest Boyer called for "a more inclusive view of what it means to be a scholar," to include scholarships of inquiry, integration, application, and teaching (Boyer, 1990, p. 24). In effect, Vantage research evaluation policies limited research to the scholarship of inquiry, whereas Cosmopolitan State policies embraced scholarships of inquiry, integration, application, and teaching. The broader definition fostered more compatibility between faculty members' research and classroom teaching roles and, therefore, the potential for greater role integration. These findings lead to Proposition 3: *The broader the university definition of what counts for research, the more faculty are able to integrate research and classroom-oriented teaching.* This may be especially true for faculty who work in hard disciplines with hierarchical knowledge structures.

Faculty Involvement in Department Decision Making

Having a voice in decisions about teaching assignment enhanced faculty members' opportunities to integrate research and classroom-oriented teaching. English faculty at both universities requested the courses they wished to teach. The chairs did their best to honor faculty requests. Sometimes chairs asked faculty to teach less desired courses to cover the

required curriculum. Faculty felt their requests were met often enough to enable them to design some courses to complement their current research interests. Vantage physics faculty also chose which courses they taught. Although the hierarchical knowledge structure in their discipline restricted opportunities for integrating classroom-oriented teaching and research, Vantage physicists could choose to teach upper division or graduate courses that provided the foundation knowledge for their specialties. In such cases, Vantage physicists showed students how the principles taught in class might be applied with examples from their current research. Vantage physicist Sam Youngman integrated classroom-oriented teaching and research when he taught a course on what he called "the edge" of his research to advanced graduate students and postdoctoral fellows. Vantage physicist Paul Zepeda described the occasions when he brought his research into the classroom:

Normally I would say that you know there is one thing once a week, one out of every three lectures, there will be some topic that comes out of the more recent [research]. . . . So it gives the students a chance to look into some things and directions that are very closely related to current research activities. . . . It brings the topic into somewhat more life rather than a dust-covered textbook.

Except for Gary Byrne, Cosmopolitan physicists found fewer opportunities than their colleagues at Vantage to bring their research to life in the classroom because they had little say in which courses they taught. The chair made all teaching assignments. Both the Cosmopolitan dean of science and the physics chair endeavored to foster a supportive environment for research by minimizing classroom teaching responsibilities for active researchers. The dean reduced their teaching loads. The chair reduced active researchers' class preparation time by assigning them to teach the same courses term after term. Star researcher Ryan Newmann appreciated the opportunity to focus on his research but also said that the classroom teaching and research aspects of his work were "totally separate."

Based on prior research, I expected that the top-down bureaucratic structure and faculty union contract at Cosmopolitan State might lead to rigidly defined and differentiated role expectations for faculty teaching and research. I also expected that active faculty participation in governance at Vantage University might foster faculty autonomy and, hence, more opportunities for integrating teaching with research. Findings from this study, however, suggest that faculty participation in department decision making may be a more important influence on teaching-research integration than university governance structures. Even though paradigm consensus and hierarchical knowledge structures constrained inte-

gration of research with classroom instruction for most of the physicists who participated in this study, participation in decision making about course assignments provided Vantage physicists with more integration opportunities than their physics colleagues at Cosmopolitan State. Moreover, even though they worked at the same university, Cosmopolitan English faculty had more voice about their classroom teaching assignments than did Cosmopolitan physics faculty. This leads to Proposition 4: *The more that faculty are involved in departmental decisions about teaching assignments, the more able they are to integrate teaching and research by teaching courses about their current research topics or incorporating information about their current research in existing required courses.*

Perceived Benefits of Integrating Teaching and Research

Despite differing university and disciplinary contexts, all faculty whose work I observed for this study felt that they had more work to do than they could reasonably accomplish. Some faculty responded to overwhelming administrative expectations for both teaching and research by focusing on one goal at the expense of another or by trying to accomplish both goals separately. Other faculty responded to the same expectations by integrating teaching and research. Cosmopolitan physicists illustrate the alternative responses to integrating classroom-oriented teaching with research. Ryan Neumann acknowledged that he sometimes neglected classroom teaching in the effort to accomplish his research goals. He told me that the chair and dean “pull strings in the background to make sure that I teach the same courses and that I’m not overly burdened with teaching; that allows me to stay competitive in research. . . . The good news is that the research is going well. The bad news is that teaching is becoming too hard just to fit in.” Hank Powell told me that his main strategy for achieving both classroom teaching and research goals was “working long hours.” Gary Byrne was used to long hours in order to teach four courses and conduct frontier research. He told me that after a few years, he “discovered that there was a week in bed ill each term, and I decided that was stupid. And so I began cutting corners.” Gary “cut corners” by redirecting his research efforts to writing an introductory physics textbook, a project that integrated research more effectively with his classroom teaching responsibilities.

Faculty comments revealed benefits they derived from integrating research with research training. Hank Powell said, “Having people that you do research with that you also teach is an efficient thing.” Sam Youngman told me, “my closest colleagues are my students” and “the

best thing about being here at Vantage is the students. They are the best students in the country. That is why a lot of faculty are very successful." Faculty also talked about the benefits they derived from integrating research with classroom-oriented teaching. When English professor Darryl Allen took a sabbatical from Cosmopolitan State, "little new work emerged. Part of the reason was that I was not working with something else." Time away from teaching hurt rather than helped his writing. Darryl described how teaching invigorated his fiction writing:

There are ways the memory works through the immediacy of teaching that gets into the writing. . . . Then there is the pressure of talking to others, the energy that comes from talking to others. The importance of the work and the language has to be in you in a more complete way than if you were just reading it for yourself.

Thus, faculty observed for this study found that integrating research and teaching enhanced their research as well as helped them to manage the demands of classroom teaching, training research students, and producing publications.

Discussion

This study challenged assumptions about fragmentation of faculty roles by literally looking at what faculty do and provided evidence that faculty do occasionally integrate teaching and research. On average, the faculty observed for this study accomplished teaching and research goals simultaneously during one-fifth of their work time. The empirical evidence that faculty integrate their teaching and research roles is consistent with Marks's (1977) expansion perspective on individual performance of multiple roles. Observations revealed that individuals are not continually faced with decisions about fulfilling the expectations of one role at the expense of others. The faculty who participated in this study sometimes chose to engage in activities that simultaneously satisfied expectations for two roles. They integrated teaching and research, or in Turner's (1962) terms, they "merged" the two roles.

Faculty members' opportunities to integrate teaching and research were shaped by the ways expectations for the two roles were defined by their disciplinary, university, and departmental contexts. Consistent with Getzels and Guba (1954) theory of severity of role conflict, differences in rigor and compatibility of role expectation definitions corresponded with differences in levels of teaching-research integration. Disciplinary paradigm consensus and knowledge structures were more rigorously defined in physics than in English. As a result, physicists integrated re-

search with classroom teaching less than English faculty. Relative compatibility of role expectations for research and teaching students to conduct research enhanced physicists' opportunities to integrate the two roles. In contrast, English disciplinary expectations for a counselor role as faculty taught students to conduct research seemed incompatible with expectations for how faculty should conduct their own research.

Rigorously defined role expectations may not, however, reduce opportunities for role integration, if the clearly defined role expectations are broad in scope. Although expectations for research were more clearly defined at Cosmopolitan State University than at Vantage University, the Cosmopolitan State expectations permitted a specific but broad range of research activities corresponding to Boyer's (1990) scholarships of inquiry, application, integration, and teaching. The Vantage University research role expectations were vaguely defined but in practice allowed only for the scholarship of inquiry. Finally, departmental differences in faculty participation in decisions indicated that role expectations are socially negotiated. Some contexts provide more opportunities than others for individuals to negotiate actively the definitions of their role expectations.

Limited expectations for faculty members' teaching role may have restricted some scholars' and observers' perceptions of teaching-research integration. The distinction between classroom-oriented teaching and research training is seldom noted by faculty members themselves or by those who study their work. Indeed, most scholars who have discussed or investigated the relationship between teaching and research have focused either on classroom-oriented teaching or on research training, but not both. As a consequence, each scholar's conclusion about whether teaching and research conflict, are not related, or are complementary has been influenced by the type of teaching on which the scholar has focused. Barnett (1992), for example, discussed higher education in terms of teaching students in courses and concluded that "the roles of teacher and researcher are distinct" (p. 633). Faculty role conflict studies usually measure teaching outcomes with students' evaluations of faculty members' classroom performances (Feldman, 1987; Hattie & Marsh, 1996; Braxton, 1996). Thus, the research training aspect of faculty teaching endeavors has been omitted from these investigators' discussions, and they conclude that there is little or no relationship between teaching and research. In contrast, Clark (1997) and Kolson and Yuen (1993) advocate hands-on teaching in and out of the classroom that should be rooted in research activity; they encourage and expect high levels of teaching and research integration. Scholars' definitions of the teaching role influence their expectations for role conflict or integration.

The results of this study reveal the inadequacies of investigating con-

flict or complementarity of teaching and research when teaching is considered either as primarily oriented toward the classroom or as primarily oriented toward training students to conduct independent inquiry. All of the faculty I observed engaged in classroom-oriented teaching and in research training with both undergraduate and graduate students. Their disciplinary, university, and departmental contexts, however, shaped how they integrated the two types of teaching with research. Integration of classroom-oriented teaching and research appeared to be facilitated by low levels of disciplinary paradigm consensus, horizontal and expansive knowledge structures, a broad university definition of research, and faculty participation in decisions about course assignments. Integration of research training and research appeared to be facilitated by disciplinary norms for collaborative work.

Implications

This study shows that important information about faculty work is missing from much prior research on faculty workload and faculty work role conflict. As noted above, the results of workload studies that asked faculty to estimate the time they allocated to purposes of work defined as mutually exclusive did not, by their design, allow for reporting of the time that faculty work fulfilled more than one purpose. As a consequence, the proportion of time allocated to some purposes of work was probably underestimated. Two workload studies conducted at single institutions allowed faculty to estimate time that their activities contributed to more than one institutional objective (teaching, research, service, administrative, or clinical), and found that faculty accomplished multiple goals as much as 45% of their work time (University of California, 1970; Lee & Kutina, 1974). Future studies should explore the extent of research-teaching integration for larger populations of faculty.

This study's findings are limited by the nature of the study and the sample. The faculty who participated in this study constitute a purposive sample of faculty in two disciplines at two universities rather than a representative sample of all faculty. I have described these particular faculty and their particular university and disciplinary contexts so the reader interested in applying the analyses to other individuals and contexts can judge which findings are transferable to a new situation (Lincoln & Guba, 1985). The concepts and propositions generated by this analysis are testable in other situations and with other groups of faculty. Women, minorities, not-yet-tenured, and part-time faculty are likely to experience their university and disciplinary contexts differently from full professors. Moreover, even in the same department, tenured full professors

whose interests and abilities in teaching and research vary are likely to integrate teaching and research at varying levels. Future research might explore the ways that gender, race, rank, and ability influence the ways and the extent to which faculty integrate teaching and research.

Policies designed to reward faculty only for teaching or only for research may encourage faculty to focus their attention on one aspect of work at the expense of the other. Instead, increases in faculty productivity may be more likely to occur when working conditions are fostered that encourage integration of teaching and research (Layzell, 1996). The patterns of teaching-research integration identified in this study have a number of implications for faculty members and administrators.

Faculty who work in disciplines where the counselor model of research training predominates should be encouraged to collaborate more frequently with undergraduate and graduate research students. Faculty who work in disciplines such as English, where researchers typically work alone, could explore interpretations of texts or cultural analysis with their student apprentices, thereby training students to conduct research while simultaneously making progress on their own research. Theoretical physicist Sam Youngman demonstrated that research can be accomplished in groups even if tasks cannot be easily subdivided. Some research tasks can be subdivided, even in soft disciplines. English professor Blake Saxon described how research tasks were divided among assistants by his disciplinary colleagues in Europe. As Blake acknowledged, working collaboratively with students more often might increase faculty productivity.

Faculty who work in hard disciplines with hierarchical knowledge structures should be encouraged to invigorate their classroom presentation of elementary principles with examples from the faculty members' current research. As noted above, Vantage physicist Paul Zepeda showed that even a physicist conducting research on the frontiers of the field can bring aspects of his current research into undergraduate lectures and discussion. Faculty will have more opportunities to integrate research and classroom-oriented teaching if they have a voice in decisions about teaching assignments. Furthermore, the experience of Cosmopolitan physicist and textbook writer Gary Byrne indicates that broadening a university's definition of research, especially to include the "scholarship of teaching" (Boyer, 1990) may be another way to increase faculty opportunities to integrate research and classroom-oriented teaching.

Notes

¹The argument that integration improves efficiency of time use makes no claim about the quality of students' learning or knowledge produced as a result of faculty members' teaching or research efforts.

²According to the Carnegie Foundation for the Advancement of Teaching (1994), Vantage is a Research University I, and Cosmopolitan State is a Master's Level University I.

³Because of the small number of faculty observed for this study, I attempted to limit variance in faculty demographic characteristics to the issues salient to the research questions: university type and discipline. Therefore, I controlled for rank, race, gender, and ability. All twelve faculty were full professors in the prime of their careers. None were considering retirement within the next five years. Because there were a total of three women and minorities across both physics departments, I only asked white men to participate in the observation phase of the study. Chairs' recommendations of capable faculty in all departments reduced the possibility that integration findings might be confounded by comparing faculty "stars" with "deadwood."

⁴These self-reports of faculty time use differ from traditional methods of self-reported time allocation in two important ways. First, the data are specific. Faculty were describing details of activities rather than estimating overall allocation of time to purposes of work over the period of an academic year. Second, the data are fresh. Faculty experienced little trouble remembering work activities for one or two days. Two professors even jotted down details about their previous day's work so their accounts to me on the observation day would be more accurate. Because the accounts faculty gave me of weekend, evening, and confidential activities are specific and fresh, they are also probably more reliable. I took as another indicator of the reliability of faculty accounts the details they shared about their personal activities. For example, one professor gauged how much time he spent preparing for class one Saturday in relation to the time he spent paying bills, working in the garden, and going out to dinner. Another faculty member knew that he finished work on a report to a funding source precisely at 9:37 P.M., because that's when he left the office to go to a movie that began at 9:45 P.M.

⁵Observer effect on work activities might have affected the internal validity of this study. Internal validity would have been threatened to the extent that faculty modified their activities when I was observing them. In fact, one faculty member who was concerned about observer effect declined to participate in the study. Evidence that my presence had some, but minimal, effect on faculty work came from three sources. First, professors talked to me only 4.5% of the total amount of time recorded for all participants in this study, and 1.9% of that time they were also accomplishing purposes of work, such as walking to class. Second, a few of the activities I observed were not exemplary; faculty were comfortable enough with my presence to engage casual conversations or attend to personal affairs. Finally, during our last interviews, several of the faculty volunteered that my presence had not changed their work patterns.

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From Coordinating Board to Campus

Implementation of a Policy Mandate on Remedial Education

Remediation of students' deficiencies in preparation, basic skills, and foundational knowledge has been an enduring, but largely ignored, component of curricula in colleges and universities in the United States. In recent years, however, policy makers have become more aware and less accepting of this state of affairs. While analysts document the extent of remediation—one regional study found that roughly one-third of freshmen students took remedial classes at 85% of the institutions surveyed (Abraham, 1992) and a national study uncovered comparable figures, 29% of freshmen at 78% of institutions (NCES, 1996)—legislatures and state coordinating boards have begun to consider and enact policies to dictate and contain remedial education (Lively, 1993, 1995a, 1995b). From their perspective, the presence of remediation at colleges and universities has increasingly come to symbolize the failure of the nation's precollegiate educational system, the eroding standards of American colleges and universities, and an inefficient use of public resources.

State higher education coordinating boards, in particular, have become the policymaking bodies that translate concerns about remediation into operational imperatives for public colleges and universities. Boards are intended to be, in Berdahl's (1971) phrase, the "suitably sensitive mechanisms" serving to advocate institutional interests and academic values and to buffer institutions from direct political intrusion while still pointing institutions in the directions preferred by the public and state policymakers. From an institutional perspective, boards have always intruded into their independent and autonomous operation. However, observers

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have suggested that the structures for coordination that came to prominence in and around the 1960s have, in recent years, combined with economic and social conditions to increase system coordination and centralized control in public higher education (see, for example, Clark, 1994; Hearn & Griswold, 1994; Kerr & Gade, 1989). What may at one time have been a mediator between institutional and external interests may since have become more of a proctor and surrogate that readily passes external demands through to institutions in the form of increasingly intrusive bureaucratic control mechanisms such as policy mandates.

In this vein, a board's policy dictates to institutions about remediation raise a number of troubling issues. They appear to threaten campus autonomy, limit the ability to accomplish an institutional mission, and restrict the potential applicant pool and enrollment base. First, the type of course work offered and who must take it are fundamental questions for institutions of higher education. Answers to these questions say a lot about the nature of an institution and the professional identity of the people who work in it. We typically think of questions such as what is taught, to whom, and for how much credit as matters of institutional and, more specifically, faculty prerogative. Classic statements of governance such as the AAUP/ACE/AGB (1966) "Statement on Governance of Colleges and Universities," tend to consider academic issues and, in particular, curricular topics as the domain of institutional faculty. In truth, the governance of institutions is not as segmented as this statement suggests, and multiple stakeholders are involved in the many decisions arising in the normal operation of higher education institutions. Even so, dictating remediation policy from the coordinating board level can appear excessively prescriptive and preemptive of the faculty role in overseeing the curricula of institutions.

Second, remediation in higher education has a proud tradition. It is one mechanism that gives real dimension to access and equal opportunity in higher education. Remedial services have been vital tools in helping GI bill, disadvantaged minority, low SES, returning adult, and handicapped students succeed in college (Clowes, 1992, pp. 460–462). Thus, some institutions, particularly in the public sphere, incorporate remediation as an important ingredient in addressing part of their mission and strongly held values. As Clowes (1992) states, remediation in higher education "carries a heavy ideological weight" (p. 475), and Shaw (1997) suggests that remediation is an "ideological battleground" (p. 285). This is clearly reflected in works that portray remediation as (a) a key component of access, equal opportunity, and assimilation to higher education; or (b) a symptom of academic degradation of the academy and a contributor to "dumbing down" entire institutions (Manno, 1995; McGrath & Spear,

1991); or (c) an imposition of middle-class values on marginalized groups of students in a form that serves to preserve social inequalities (Rhoads & Valadez, 1996). These same ideologies, absent some of the more caustic or arcane rhetoric, show up in institutional considerations of remediation.

Third, as a practical matter, remediation makes it possible for institutions to admit and retain a substantial number of students who otherwise would not likely enter and be successful at the collegiate level. Without it, institutions could be cut off from a source of enrollment, which could have financial consequences as well as implications for addressing mission. As these three considerations discussed above indicate, several aspects of the culture of an institution come into play as its faculty and staff attempt to implement a mandated policy on remedial instruction.

This study focuses on particular institutions' implementation of a specific remediation policy enacted by the Oklahoma State Regents for Higher Education (OSRHE). The OSRHE is a constitutionally established, regulatory coordinating board with the full range of responsibilities for planning and coordination, program approval, and recommendation and allocation of consolidated budgets for the state's public colleges and universities (McGuinness, 1994). It has authority over a mix of constitutional and statutory governing boards for institutions or segments of the public higher education system. Thus, although not a governing board itself, the OSRHE has a wide range of powers to exercise in performing its coordinating function.

Beginning with the fall term of 1994, OSRHE policies required remediation for students who did not meet certain standards upon admission. The OSRHE also considered restricting remedial instruction to the state's community colleges, but ultimately decided to maintain that position as a preference rather than a policy mandate. According to the mandates contained in the policy, traditional aged, degree-seeking students scoring below a specified minimum on the ACT subtests (English, mathematics, science reasoning, and reading) must take remedial classes in their deficient areas. The Regents set the statewide minimum ACT score at 19. Institutions had students who fell below these standards before the policy, but they were not necessarily considered candidates for remediation or required to take noncredit courses. The new Regent's policy mandated that those students be required to enroll in noncredit, remedial courses.

Previous Research

In their case study of a state-level policy, Frost, Hearn and Marine (1997) state that "there is both a scholarly and a practical need to investigate how . . . conflicts over institutional purposes arise and are ad-

dressed in state postsecondary systems" (p. 387). This study focuses on how policy creates circumstances in which such issues are addressed at the institutional level. It suggests that a complete view of policy incorporates the institutional processes engaged as policy is joined with institutional values and culture to realize the aspects of purpose a policy promotes. The significance of a policy can only be fully grasped in the interaction of a policy's preferences and institutions' accommodations in implementation.

Analysis of policy implementation seem to have a penchant for finding three stages in the development of the field (Goggin, Bowman, Lester & O'Toole, 1990; Odden, 1991; Sabatier, 1986), although they do not always agree about the lines of demarcation and the characteristics of studies in the three phases. Nevertheless, all agree that there have been some general movements in the field, for example, from case studies of single policies in specific locations that produced rather pessimistic conclusions about implementation (Bardach, 1977; Pressman & Wildavsky, 1973) to formulations of analytical models and tests of theories designed to explain variation and potentially enhance control over implementation processes (Mazmanian & Sabatier, 1983). Both of these types of studies tend to take top-down approaches to evaluating how well policy implementation realizes the intentions of policymakers. The top down perspective, based on hierarchical control of implementation into lower levels, tends to consider any deviation from policymakers' requirements and intentions as corruptions of the policy process that should be kept in check as much as possible.

However, a second shift has been to develop bottom-up approaches, examining how "street-level bureaucrats" influence developments surrounding an issue or policy (Elmore, 1980; Weatherley & Lipsky, 1977). Viewing implementation from the bottom-up perspective means recognizing the complexity of social problems at the point where policy meets a social problem directly. It realizes that local conditions and contexts vary, sometimes widely, and that policy needs to include enough discretion to allow actors to shape their decisions to fit local considerations and to seek mutual adaptability of policy and implementor. Palumbo and Calista (1990) go so far as to suggest that policy implementation is simply the continuation of the political process of policy formation. "When policies are changed through political and organizational conditioning and given more specific content during implementation, this does not connote policy failure" (p. 6).

While policy implementation research moved to testing analytical models in broader studies of policy application or to focusing on "bottom up" approaches, researchers have been slow to fully integrate conceptual

tools like the social construction of reality, interpretive analysis, and cultural analyses of organizations into the study of social processes surrounding policy implementation. Recent work has begun to address this conceptual gap (Fischer & Forester, 1987, 1993; Yanow, 1996). This interpretive approach focuses on the human capacity for making and communicating meaning and, when applied to policy implementation, provides the foundation for considering the multiple meanings that policies can evoke among the various stakeholders in the policy process. In addition, it directs attention to the role policies play as symbols, communicating conceptions of value, identity, and status in the social interactions that are part of policy-making and policy-implementation processes.

An interpretive approach to policy analysis, then, is one that focuses on the meanings of policies, on the values, feelings and/or beliefs which they express, and on the processes by which those meanings are communicated to and "read" by various audiences. . . . In analyzing public policies or the actions of organizational implementors, such an approach focuses on policy and/or organizational artifacts as the concrete symbols representing policy and organizational values, beliefs, and feelings. (Yanow, 1996, pp. 8–9)

In this same vein, organizational culture, which has become an important metaphor for understanding organizational processes, provides a framework for interpreting and understanding policy implementation issues in organizations. Rather than resorting to attributing implementation problems to "technical difficulties" (Pressman & Wildavsky, 1973), "political games" (Bardach, 1977) or unclear policy objectives (Mazmanian & Sabatier, 1983), the notion of culture emphasizes the local, socially constructed web of values and beliefs within which policies must be accommodated, and interpretive analyses focus on the social processes through which such accommodations are achieved.

Symbolic elements that represent and convey policy meanings include the language, objects and acts associated with a policy and its implementing agency. As the organization charged with implementing a policy goes about taking the various actions that constitute implementation, it creates these symbols anew or uses existing ones, at times invested with new meanings. (Yanow, 1996, p. 13)

To implement a policy, the local actors must find some way to make sense of the goals, assumptions and expectations that they ascribe to the policy, and to reconcile them with the culture of their organization in some fashion. McLaughlin suggests, "Implementors at all levels of the system effectively negotiate their response, fitting their action to the multiple demands, priorities and values operating in their environment and the effective authority of the policy itself" (1987, p. 176).

This study adopts an interpretive perspective and focuses on the issue of how people in three institutions made sense of the OSRHE's policy mandate and stance on remedial instruction. The study addresses questions such as:

- How do faculty and staff members come to understand the policy and to define the policymakers' intent and its relevance to their institution and situation?
- Are there tensions between the institutional traditions, values, and practices and the policy mandates? If so, do the institutions change to fit the policy, or is the policy massaged and redefined at each institution to create a fit, or is the policy simply ignored?
- How do faculty and staff reconcile their own sense of themselves with an explicit and potentially invasive policy mandate?

Method

This project and the research questions it provoked demanded that the research be highly sensitive to the local contexts of the institutions involved and tap into the beliefs, conceptions, and values that guided the institutional faculty and staff who together determined how the institutions would respond to the OSRHE's remediation mandate. In effect, the research had to access the interpretive, sense-making process within the institution and employ methods that enhanced an understanding of those processes from the standpoint of those constructing their institution (Schwandt, 1994). It has become standard to employ research methods that allow an intimate and in-depth view of the language, behavior, and interpretations of people in the context under study. Techniques such as participant observation, interviewing, and analysis of documents promote the sensitivity to the site, the individuals that are the focus in the research, and the constructions of meaning that this type of research requires.

I conducted the research at three separate institutions in Oklahoma:

- Langston University is a publicly funded, historically black university. Its enrollment approaches 4,000. It is part of the system of land-grant colleges in the state and offers an array of professionally oriented programs. Langston offers degrees through the master's level.
- Tulsa Community College (TCC) is a metropolitan community college with four campuses and an enrollment exceeding 20,000. It has a strong record of service to the Tulsa metropolitan area through its continuing education, occupational and college transfer programs up to the associate's degree level.

- The University of Central Oklahoma (UCO) is a public, comprehensive university. With an enrollment of roughly 15,000, it is the largest of the regional institutions in the state. It is a former normal school, and education and business fields now account for a substantial portion of the enrollment. UCO offers degrees through the master's level.

This selection of institutions provided me access to (a) two university-status institutions that maintain admission standards but still expect some portion of their students to require remediation and (b) a contrasting case of an open-admissions community college for which remediation is an explicit aspect of mission.

My principal data collection technique was semistructured interviews (Fontana & Frey, 1994; Rubin & Rubin, 1995) with the people involved in developing and implementing the institutional plans and procedures for placement testing and remedial instruction and services, including institutional assessment staff, academic support services staff, full-time faculty teaching remedial courses, chairs and members of the departments most directly affected—typically English and mathematics units, and academic administrators. I identified the key people who fit these categories primarily by asking people whom I should interview that fit these categories or who played a role in implementation. I interviewed 15 people at both Langston and TCC and 20 at UCO. Virtually all the interviews were a single sitting, running 45 to 60 minutes. I interviewed one key participant on each campus twice.

In the interviews, I discussed with participants their general views about what students with low standardized test scores needed to be successful at the institution and what obligations the institutions had to the students with low test scores that it admitted. I asked people to recall their roles in determining how the institution would implement the mandates of the OSRHE on remediation. I also asked them to recount what issues, problems, and considerations arose in the process and how these affected the set of plans and procedures ultimately adopted at the institution. I encouraged the participants to introduce any considerations that they deemed important and relevant to the issues. I augmented the interviews with a review of available documents, including meeting agenda, minutes and handouts, institutional reports to the OSRHE, and student advising documents.

In the analysis, I coded passages from interview transcripts and documents and used the passages to identify key ideas and concepts and to compare the statements and interpretations of the various participants. For as long as possible, I left the codes and interpretations in the participants' words, and I tried to note the similarities and to preserve the differences within and between code categories. Eventually, I developed

themes and refined concepts and ideas that suggested collective meanings and allowed broader interpretations of implementation of the policies on each campus.

Policy Interactions

The OSRHE enacted the mandate for remediation through changes in its policy on institutional assessment, which established "entry-level assessment" as one aspect of a multilayered assessment program at each institution. In addition to the elements of the policy described at the beginning of this article, the remediation provisions (Policies and Procedures of the Oklahoma State Regents for Higher Education, Policy II-2-118 and 119) also include an allowance for each institution to identify a "secondary test" for reevaluating students prior to placement, as long as that testing procedure is part of the institution's assessment plan, and assess a fee for remedial courses to cover the costs of additional assessments and class sections. At Langston and TCC, the fee increased the cost of remedial classes to students by about 40%, while at UCO the cost to students fell by 7% for reasons explained below.

While there was the potential for enrollment shifts under the Regents proposal, any revenue implications of reduced enrollment from the policy seemed to be either ignored or tangential to the implementors. The Oklahoma funding formula tends to mute the impact of enrollment reductions by building in multi-year averaging and hold-harmless provisions. Enrollment declines will affect budgets over the long term, but they do not have proportional impact in the short term, and the effects of enrollment shifts are even more limited in years of little or no increase in state budget allocations, as the institutions experienced in the early to mid 1990s.

The policy on mandatory remediation is tied closely with two other, preexisting policies of the OSRHE. The first, a policy governing admissions, sets the standards students must meet to be accepted at public institutions. The admissions policy helps to maintain the hierarchy of institutions within the state system by identifying the community colleges as open access institutions and establishing different minimum ACT scores and high-school class rankings for admission to the state's flagship universities and regional universities. In addition, the policy establishes a set of courses in English, mathematics, lab sciences, and history that students should have as part of their high-school curriculum. By establishing and gradually increasing the sets of minimum standards for admission to regional and research universities, the policy on admissions is also one of OSRHE's major vehicles for advancing an agenda to improve the academic standards of the state's universities. At the time of this study

the minimum ACT composite score for admission to the regional universities, 19, happened to correspond to the cut-off score for required remediation, suggesting that many admissible students at Langston and UCO could have subtest scores below the 19 threshold for remediation.

A second policy governs how students who have not taken all of the high-school curricular requirements can still enroll in an institution of higher education. It dictates that those students must take precollegiate, noncredit courses within their first 24 credit hours to remove their curricular deficiencies. It was this policy that required institutions to offer numerous sections of noncredit courses in the first place, and in most cases those courses became the vehicle for remediation when the 1994 policy was implemented. In addition, the remediation policy in some ways superseded the curricular deficiency policy. Once the remediation requirement was in place, students who met the curricular requirements still had to remediate if testing showed it was needed, and students with curricular deficiencies had them automatically removed if they demonstrated they did not need remediation in the subject. In effect, the new policy moved the focus in new student advising from having had the proper courses in high school to possessing the tested skills and knowledge, in large part because entry testing established that approximately one-half of the students needing remediation had no curricular deficiencies (OSRHE, 1992, p. 4).

The information collected in this study indicated that both of these policies have become linked with the mandate for remediation in people's minds. People I spoke with often considered the policy to be another tool in the Board's drive to increase the academic quality of public higher education while at the same time limiting access to the top two sectors of the system. This was not an unreasonable perception, because the OSRHE's first report on remediation recommended that the regional and research universities "cease remedial course offerings" by fall of 1997 (OSRHE, 1992, p. 7). This comment from a UCO faculty member also reflected this understanding:

The Regents had for some time said that the four-year colleges did not need to be in the business of remediation, across the board. There was pressure being put on the administrations of the four year colleges to eliminate that in their curriculum, and it was felt that would be more appropriate for the two-year colleges.

Findings

To adopt momentarily a top-down perspective, all three of the institutions acted to change their policies and procedures related to placement

testing and remediation as they moved toward compliance with the Regents' new policy. In substantial measure all three implemented the policy of the OSRHE. Before the 1994 policy change all three institutions already had procedures in place for administering placement tests, recommending placement, and offering remedial courses for students with curricular deficiencies or low test scores. Thus, the fundamentals for implementing the policy already existed, and very little had to be created from scratch. However, before fall 1994, students could accept or reject the placement recommendation of the institution, and the academic advisors had the leeway to adjust placement recommendations based on factors other than test scores, such as students' high-school grades, maturity, or commitment to education. The new policy mandate, in effect, served (a) to eliminate the leeway of both the students and their advisors for avoiding placement in remedial classes, (b) to add the fee for taking remedial courses, and (c) to make students without curricular deficiencies potential candidates for remedial courses. Thus, the new policy also served to increase the number of students who take remedial courses. In addition, all three institutions used the implementation process as an opportunity to refine their placement test procedures and to reconsider the secondary placement tests used.

Despite the implementation results, the faculty and staff members of all three institutions had little or no respect for the role of the OSRHE in policymaking generally. More specifically, when asked about the Regents' intent in passing the remediation policy, comments often started with disclaimers such as "I don't know. [Chuckles] I don't know much about those state regents. I don't know what to suspect" (TCC faculty member), and "If its like those things mostly are, they probably made a unified decision which came from a variety of motives from different regents" (UCO faculty member). People typically insisted that anything they said was sheer guesswork on their part. But they were willing to hazard guesses. Answers included one or a combination of: (a) improving students' chances for success, (b) sending a message to high schools that they were graduating a large number of students with inadequate preparation for college, (c) improving the efficiency and cost effectiveness of the higher education system, (d) eliminating remedial instruction from the regional universities and research universities, (e) sending a message to universities to stop admitting underprepared students, and (f) telling institutions to stick to their Board-approved institutional missions.

Furthermore, institution-based faculty and staff expressed distaste for some of the details of the policy. The designation of the score of 19 indicated to most the Board's sheer arbitrariness. A faculty member at UCO said, "The part of this that I am most skeptical about is this ACT cutoff

score. I'm not sure I know of any reason why that makes sense. If there's a good argument for that number, I don't know what it is." However, this attitude was most evident among faculty and staff at TCC, many of whom echoed this tale: "The rumor we heard was that the reason they selected 19 was because there was a member of the Regents whose daughter was ready to enter college and she had scored 19, so they didn't set it any higher." At all three institutions, faculty and staff also expressed real disdain for the remediation surcharge and suggested that the additional money was not used to help the students and, in fact, was little more than a punitive measure aimed at the students who may not have been taught the material or were taught it many years ago.

It was as if the Regents were removed and indecipherable to people at the institutions, particularly at TCC and UCO, and they had no way to fully fathom what or how the Regents thought about education and remediation. This did not mean, however, that they did not share some of the concerns that they attributed to the Regents. Faculty wanted students in their classes who had a grasp of the basic knowledge and skills that were a prerequisite for their classes; they agreed that too many students were not getting from high-school classes what they needed to succeed in college level work; and they understood the fiscal conditions and public expectations demanding that the Regent's seek to assure the efficiency, cost effectiveness, and accountability of the higher education system. The faculty and administrators interviewed on all three campuses seldom questioned the appropriateness of the Regents' mandating policies at such a detailed level of academic functioning.

Despite these similarities across institutions, the policy for mandatory remediation took on a different flavor at each of the three institutions. In implementing the policy, each institution was translating a different set of values into action and the incorporation of the policy had different meanings at each. A discussion of the implementation at each institution follows.

Langston University

As a public, historically black university, Langston has a unique role within the state's higher education system and a special mission to serve as a foundation for the culture of the institution. There is a strong dedication among the faculty and staff to providing an avenue of access to higher education for black students as well as creating an environment and programs especially suited to enhancing black students' opportunities for success. The comments of one faculty member were typical.

I feel like there is a role for the historically black university. Part of that role is to make opportunities for a student who would not be able to get into the

mainstream of higher education to go ahead and succeed. I'm pretty proud of what we have accomplished in that respect. I mean, we've had our graduates who go out and stand level with any graduates—some of them that wouldn't have been there had it not been for a place like Langston to bridge that gap in our society.

Part of this commitment arises from the faculty and staff's awareness of the reported cultural bias of standardized achievement tests and mistrust that the tests reveal the true potential of students, particularly black students. However, it also extends to the recognition that some portion of Langston's students need help to compensate for disadvantages and inadequate educations they have experienced before entering college.

Faculty and staff are especially committed to boosting the esteem of students and to providing the individual attention and academic support they may never have had before. They spend a substantial amount of time with students in and out of class, and their mutual commitment and work ethic produce something of a family atmosphere at the institution. In addition, to support this aspect of its mission, Langston was fully engaged in skills testing and remedial coursework long before the Regent's policies required it.

Langston has provided for students who maybe could not get in another institution or maybe were not qualified because of these test scores, and therefore we have the programs built in here to try to bring these students up and graduate them as competent people in society. (faculty member)

Before the Regents' assessment and remediation policies, Langston had all its new students take placement exams during an orientation session. They recommended placement for all, including adults, based on the tests, and they claimed to have had "pretty good success" convincing students to take remediation even without the mandate. As a result, the institution had no difficulty putting the administrative and technical aspects of the new policy into effect.

However, to the faculty and staff of Langston, the policy for mandatory remediation meant much more than providing needed help to students. There was widespread concern at Langston about the cumulative effect of various Regents' policies on the institution and the values it embodies. The faculty and staff feared that the remediation mandate, along with increases in the admissions standards and tuition and fee rates would restrict entry to Langston for some students who traditionally attended the institution. The biggest threat in the remediation policy was the Regents' desire to have all remediation housed by community colleges. Many faculty and staff agreed that the Regents' plans "would decrease the population of freshman students. There was concern about

the potential for the entry-level program to negatively affect our enrollment" (administrator). And someone else suggested, "The higher standards of the Regents could end up closing the doors to the type of students we've had success with in the past" (staff member).

To the faculty and staff at Langston, limiting students' entry to their institution would have the effect of denying full access and opportunity, because they questioned whether the public community colleges could offer the same conducive environment to black students and, therefore, could do as well in developing these students' academic skills.

Our students are black and largely from urban high schools, and they are not really groomed for college. These types of students do not seem to be in the policy mix. The Regents and some others seem to think they should go to a community college first to prove their ability at this level, and then transfer to a four year college. However, that approach, in effect, would eliminate or cut off some of our potentially successful students, because they need the Langston environment in order to rise to their level in the first place. (administrator)

Thus, the Langston staff believed that the university's unique mission and the resulting circumstances and needs were not consistent with the general direction of the OSRHE and were not given full consideration in policy deliberations. As one administrator expressed it:

It seems like the Regents may be trying to go back to a selective system of higher education in Oklahoma. With the entrance requirements and tuition going up due to Regents' actions, it will soon mean that only those who can afford it and meet the standards will be able to go to college, unless they fund the remediation necessary to make the system truly open. I don't see any inclination in the system to do that. They just don't have the resources.

Therefore, implementation at Langston took on an odd combination of acceptance and defiance. They agreed with the substance of the stated policy, but not the intent that seemingly drove the policy enactment.

One of the things that we did not want to do was to assess and test ourselves out of students who can make a contribution, who can attend a four-year college program and become contributing members of society. We were not going to test ourselves out of that opportunity to get these students. (administrator)

Historically and philosophically we were not in agreement with that policy, but we were determined to meet those requirements and to still not give up what we felt was our mission and what we were supposed to be doing with students who come to us. (faculty member)

In implementing the Regents policy on mandatory remediation, Langston faculty and staff had to figure out how they could apply the policy and continue to make positive use of placement testing while still

pursuing their traditional mission and serving the needs of the institutions' unique population.

Fortunately, Langston also has an admissions window that allows it to avoid the full impact that the Board's policies and preferences might have. Langston is authorized to grant associate degrees in applied science and can apply the community colleges' open admissions standards to students entering through that avenue. Thus, Langston can and does accept students who fall below the baccalaureate programs' standards, and those students often remediate and then transfer to four-year programs in the university. The alternative course of entry to Langston allowed the institution to maintain the notion that it represents the best hope for low-scoring or unprepared black students. An administrator stated, "Well, I think that within the Regents' guidelines, we probably pretty much agreed by majority if not by consensus that we would, to the extent that we could, maintain a fairly open entry." Coupled with this resolution among the staff at Langston, the Regents began to back off on their notion of restricting remediation to the community colleges.

With resolution of the threat that the remediation policy represented, Langston was able to use the implementation process to review their testing procedures. A component of the Committee on Assessment and General Education, a large committee with roughly equal representation of staff and faculty, met several times to review and eventually reaffirm the tests used for placement testing, lowered the "passing" scores on the math and English secondary tests, and established procedures to improve the test administration at orientation.

The faculty think that the mandated remediation policy has had little effect on their teaching assignments. The number of sections of non-credit math and English increased slightly, by about two or three sections per term. Furthermore, several members of the faculty, full-time and adjuncts, were hired specifically for their developmental orientation, so faculty were not concerned with making that type of teaching a larger portion of their load. Working with underprepared students and helping them advance to the expected level of achievement is simply part of the job at Langston.

In sum, Langston was concerned about OSRHE's remediation policy in the early stages, because it symbolized notions of system differentiation and nonduplication of functions and, therefore, presented the prospect of defining remediation as not part of the institution's mission. However, the university's associates degree programs provided the avenue for continued service to a traditional student clientele as well as justification for continuing its remedial activity. Thus, Langston was able to maintain a key part of the college's service to its students as well as its

mission and self-concept as being specially suited to promoting success for black students. In the end, the policy presented little or no substantive hurdles for Langston, once it was separated from the intent that could restrict student access to the institution. In effect, the institution was able to establish for itself a position befitting its unique mission and seemingly affirmed its status as a special purpose institution somewhat distinct from the tiered structure of public higher education in the state.

Tulsa Community College

Each of TCC's four campuses has its unique qualities based largely on programmatic orientation and the typical age of the students, but the faculty and staff tend to consider themselves part of a single institution rather than separate entities. TCC exhibits some of the heightened managerialism typical of community colleges in the United States. The faculty feel somewhat removed from the more significant decision making of the college, and there seems to be a general willingness to take direction from the college's central office. This is not to say the faculty members want it this way. They regret their perceived lack of input on decisions and policies but accept it as standard practice. One effect is that the college takes an aboveboard approach to policy implementation. It is typically directed out of the central office, and "we tend to be pretty compliant with Regents' policies. We make sincere efforts to determine the intent or spirit of the policy and live up to that. We don't try to buck the system or look for loopholes" (administrator).

The institution is firmly committed to its access mission. The faculty and staff are proud that they are part of an open admissions college. As one faculty member expressed it,

You know, once, I think, we determine that the student is in need of some sort of developmental course work, I think we have an obligation to provide it. I really, really do believe that. And we do—that's the neat thing about being at a junior college or a two-year college—[it's that we have the full range, and I think that we can real nicely meet just about any kind of development need the student might have. I think we have an obligation to do that.

Thus, remedial instruction is an important part of the college's offerings, because many students need it in order to be able to accomplish their educational goals. Said one administrator,

Remedial courses are just part of the college's mission and something that an open access community college should do. It's necessary to serve the broad array of students we get and the various educational goals they have, including vocational programs, one-shot classes, and returning adult students. The institution needs to be ready to take the students where they are and make it possible for them to accomplish their goals. In fact, that remediation proba-

bly *should* be at a community college, where students can get closer, individualized attention with professionals who are used to dealing with the problems they [students] face.

Obviously, people at TCC also were comfortable with the mission differentiation expressed in the Regents' formulation of the mandatory remediation and other policies.

Prior to the Regents' mandate, TCC had already begun using ACT scores or an alternative test for making placement recommendations. The English and math faculty's general support for placement testing was demonstrated by a proposal earlier in the 1990s in which they suggested that the ACT score level used within the institution to direct students toward remedial classes be raised from 16 to 19 for English and to 21 for math. Faculty members expressed a preference for a classroom situation in which they were sure that students had the skills and knowledge needed for the class and wanted more systematic controls over which classes students were allowed to register for. Faculty also felt that students were routinely ignoring the advisors' recommendations, and they thought that the academic advisors should have been more insistent in trying to persuade low-scoring students to take remedial courses. However, administrators in the TCC central office were concerned that placement testing would discourage potential students from enrolling. Therefore, the standards were set somewhat lower—17 for English and 20 for math—and they remained recommendations. The Regents' policy, therefore, coincided with faculty wishes by providing required placement and remediation that the institutional administration, for the sake of open access, had not granted earlier.

Given the agreement between the policy and the institutional view of its mission and the faculty's previous steps in placement testing and recommended remediation, implementation of the policy could proceed easily, focusing primarily on nuts and bolts issues and moving along the typical channel. The central office initiated the process. The implementing group was composed primarily of student affairs and academic counseling staff, and the concerns they brought to the task reflected their origins. A committee on developmental studies that preexisted the policy change also entered the process to provide the faculty view of the issues at hand. It is in the interaction of these two components of the implementation process that the issue of how to handle nondegree-seeking and adult students became points of contention.

The issue that arose was whether non-matriculated and adult students would be subjected to mandatory placement. The OSRHE policy specifically exempts both groups, but the institution had always treated everyone equally and the *ad hoc* implementation group was not initially aware

of the institutional leeway under the policy. "We'd already decided if we were going to determine competency for any population we were going to determine it for all populations" (staff member). Equality was an important value within the TCC system, and it also had the added benefit of uniformity and, therefore, ease of administration. Thus, even after participants in the process clearly understood the institution's leeway within the policy, some continued to argue that even non-matriculated students should be tested for the basic skills used in the classes they wanted to take, despite the practical and access issues involved. Others suggested that testing and remediation not be required for adults, due to the hindrance they may present to enrollment. One academic administrator recalled,

We were extremely concerned about what would happen to the adult student. If the person has been out of school for fifteen years, and they finally work up the courage to walk back into a college, and immediately you say, 'We got this criteria and we got that criteria.' Well, we knew what would happen if you used that approach—that student would turn around and walk out, and that's not what we wanted to happen.

In addition, members of the developmental studies committee questioned the accuracy of the tests when applied to adults. They did not want a poor performance on a test, a required non-credit course, and the additional expense of remediation to discourage adults from enrolling, particularly since the tests had such poor predictive power among that population. Ultimately, the implementation group decided to exercise the leeway permitted by the Regent's policy (a) to exempt non-matriculated students from assessment of reading competency (the skill that would apply to virtually every course) and (b) to require adults to take placement exams but use the results for recommendations rather than required placement. In effect, values of equality and administrative convenience balanced against concerns about access and the desire to keep barriers for nondegree and adult students low, especially in light of the questionable accuracy of the placement exams.

In broad policy terms, there was no contention at TCC—the Regents' policy and intent and the institution's mission fit together easily. However, in implementation, remediation issues highlighted some internal disputes. The implementation process became another forum in which to replay an incompatibility between values such as (a) promoting open access and student choice of what to study, (b) an obligation to improve students' ability to be successful in their studies, and (c) the enrollment hindrance that remediation requirements could represent for some students. The TCC stories also demonstrate the instability of value orienta-

tions in organizational decision making. In the earlier decision process the central office scaled back a faculty proposal on placement testing due to access concerns, whereas in the implementation of the Regents' remediation mandate, faculty representatives used access arguments to promote exemptions to the policy. These instances demonstrate that organizational values can serve as the bases of appeals from various sources of authority in an organization and that the connection of values to positions and proposals can shift according to the contexts of decisions made as part of a policy implementation process.

University of Central Oklahoma

The university is tucked rather neatly into the middle of the hierarchy of public institutions in the state. Faculty and staff sometimes feel the pull toward both the higher and lower forms of institutions. They would like to overcome restrictions that forbid offering doctoral degrees but would be hard pressed to provide the resources for scholarship and faculty and student support associated with higher-level programs. More directly associated with the current topic, the faculty and staff view their institution as a point of access for students formerly ignored in higher education, but there was strong sentiment that open access was not one of their primary missions. Further, they were concerned that too many of their students did not have the skills necessary to succeed in college-level courses but were also quite willing to eschew remedial offerings. Most faculty expressed a preference for not teaching remedial courses. For example, the math faculty was quite concerned about the withdrawal and failure rate in its precollege and college algebra courses, and one faculty member noted that

most of the full-time faculty did not like teaching sections of lower algebra. It's hard to teach on this campus for various reasons. The average age is 26 or 28, so they have been out of math for a long time, and even though they might work real hard at it, they still don't have the skills—probably fewer than fifty or sixty percent.

In English, the number of students in remedial courses was lower and their success rate higher. Yet, according to one faculty member,

The faculty view the noncredit courses as a different animal. They are a hybrid form, and the faculty was uncertain about how to teach them and how to pace the instruction. They have been problematic, in part because of the great diversity of abilities of students in the class. The faculty have not been totally comfortable teaching them.

Thus, the mission separation implied in the Regents' remediation policy, which would make community colleges the sites for remedial courses,

had general support among the faculty, and issues of access and remediation were cast as systemwide obligations.

My perception of this was that, even if you say that the state of Oklahoma has a responsibility to these students, the next question you have to ask is, which of the institutions will fulfill this responsibility. I guess we are being told here that this is a proper responsibility of the community colleges, but not of state four-year schools. I don't think that I have a problem with that. (faculty member)

In response to the new remediation policy, the University reached an agreement with Rose State College, a community college and principal feeder school to UCO, which had Rose State teach all the noncredit, remedial courses on the UCO campus for UCO students. High-level administrators of both institutions initiated and negotiated the deal, undertaking it in light of the clear preference of the OSRHE. Faculty and the academic departments were not involved in the Rose State agreement until they were told it was arranged. Even after the agreement was set, faculty had no involvement or contact with Rose State about the content, teaching, or staffing of the courses until well into the first year of operation. Although the departments of English and mathematics had been attentive to their noncredit courses and had worked to improve them, many faculty members expressed relief that they did not have to continue teaching such classes. Said one English instructor, "I don't know much about how the Rose State deal all came about, but I don't think the faculty was all that upset by it. I'd even say we were glad." This reflects a willingness to occupy the middle in the institutional hierarchy and to eschew access as an institutional role and value. Although some faculty and staff at UCO continue to maintain that there is still a place for remediation at the four-year, regional universities, they fell quickly and easily into the arrangement with Rose State. Many faculty and staff were simply glad to wash their hands of remedial teaching and let the Rose State faculty handle it.

In this framework, the implementation of the remediation policy was left primarily to staff members from the offices of admissions, enrollment services, advising and assessment, and it proceeded in a very "administerly" fashion. There was turnover in some key positions in these areas during the time that staff members translated the new policy into institutional procedures, so the make-up of the group changed throughout the process. The overarching consideration was to get the system of student testing, advising, and placement set up as easily as possible and with minimal disruption of ongoing routines. According to one participant, "Our major concern during the implementation, really, was how

the student flow would work. There was little or no attention to curricular or instructional issues and no faculty involvement." And, in fact, it was relatively easy, because the institution already used the ACT score of 19 and secondary tests to determine recommendations for placement in remedial courses. The staff members involved developed new rules for student advising and referral, and the policies for secondary testing and mandatory placement simply became rules for requiring student registration in Rose State classes.

The primary vehicle of faculty involvement in the implementation process was through two Assessment Advisory Committees. Their primary task concerning entry-level assessment was to review secondary test scores to see if the cut-off scores for remediation should be changed. It was a very limited, technical process which did not involve any significant policy discussion.

The impression, therefore, is of an institution that was already doing much of what the policy mandated, was comfortable about the larger intents and symbolism of the policy, and sought as easy a transition to the new policy as possible. In fact, however, the implementors retained some aspects of previous practice, even though they were counter to both the letter and spirit of the Regents' new policy. Specifically, two UCO courses, one in English and another in reading, were open to students scoring below the remediation threshold levels on placement tests, remained credit bearing, and did not result in a surcharge for enrolled students. In both cases, the OSRHE policy appeared to mandate changes in previous curricular arrangements at UCO, changes that might have incited faculty attention and involvement in an implementation process that was short of time and understaffed. It seems it was easier to leave things alone rather than to force changes on the academic departments when faculty members were not substantial participants in the implementation planning process.

The implementation of required remediation at UCO seems the most paradoxical of the three institutions. The values summoned by the various sources of authority in the process were consistent and, seemingly, should have produced compliance with the OSRHE policy. The institution's administration and faculty agreed with the Regents on issues such as the desire to enhance students' academic performance, the contribution remediation can make toward that end, the rationale for UCO's role in the state system, and the assignment of remedial instruction to community colleges. Yet, the changes in remediation emphasized appearance over substance, and institutional identity over function. Although the low-scoring students technically got remediation from a community college, they were still accepted to and enrolled in UCO and took their re-

medial classes on the UCO campus. In some cases, the same part-time instructors as before the policy change continued to teach the classes, but Rose State rather than UCO paid them and collected the tuition and fees. Furthermore, UCO also retained some practices that were clearly inconsistent with provisions of the mandatory remediation policy. The desire for administrative ease during the implementation process apparently led to practices that, in effect, maintained standards below the Regents' mandated level by granting college-level credit for remedial courses.

Conclusions and Implications

The three institutional portraits demonstrate that even a largely "successful" policy implementation process took on unique dimensions at each institution. This really is not surprising, and most observers would agree that contextual elements at colleges and universities promote implementation differences of varying degrees of importance. However, policymaking as typically practiced in higher education increasingly tends to gloss over the contexts and small complications of social action in favor of a broader view and increased control over matters of public concern. And there is good reason to endorse looking at the "bigger picture" in systems of higher education—state policy proponents can cite (a) public institutions' unsavory history of political jockeying prior to the advent of stronger coordinating bodies; (b) the conflict, faddishness, and wastefulness that might result if unregulated institutions were free to do as they wished; (c) the need to protect the public from those who would compromise educational standards or act unscrupulously to maintain the viability of an institution; and (d) the legitimate desire of taxpayers to be assured that public resources are used effectively and efficiently. Thus, public higher education in the United States has developed a policy structure in most states that has a well defined bureaucratic hierarchy operating in a top-down fashion to enact mandates and accomplish policy objectives. Furthermore, many of the academic policies, such as the one I have studied here, include all participants within the same level of government, minimizing the complications of federal/state or state/local relations endemic to some policy contexts. Thus, a set of assumptions about how policymaking should work that has been questioned in other realms of policymaking (see, for example, Odden, 1991) still governs our thinking about policy implementation in higher education. In practice, policies direct behavior or limit discretion, and a top-down view is the norm.

We should also recall that the policy studied here was not a major ini-

tiative, and it did not require substantial changes of behavior on the campuses. It simply restricted the discretion of institutions and students for deciding who should take remedial courses. It represented only incremental steps for the institutions, which were already testing students' basic skills and scheduling remedial classes for students that needed them. In other words, the procedures and institutional capacity to implement the policy were firmly in place. Furthermore, the mandate was not likely to have significant financial impact. The primary impact of the mandate on institutional functioning was simply the need for more sections of remedial courses, and the additional student fees were meant to help offset that. For the most part, the people at the three institutions accepted a hierarchical approach to this policy issue and set out to do what they thought they were told to do. It is as if they said to themselves, "It is legitimate that the Regents tell us to do such things, even if we do not fully understand why they are doing it and we disagree with some of the details."

But the policy implementation became much more complex than easily slipping in a few administrative adjustments needed to conform to the mandate. An administrator at UCO noted most explicitly, "When the policy change occurred, that sort of stimulated us—all the institutions—to look more carefully about what our role was toward remediation and how we could best implement the policy in relationship to the mission of our institutions." In each case studied here, the policy took on additional meanings and involved some fundamental issues, including the institutions' purpose and place in the public higher education system.

- At Langston the policy required the least amount of change but the greatest amount of interpretive work on the part of the institution's faculty and staff. The implementation process became an occasion for reaffirming the institution's identity, maintaining a commitment to providing black students an avenue to a higher education sensitive to their cultural background, and negating the symbolism ascribed to the policy concerning the role of university-tier institutions within the higher education system.
- At Tulsa Community College the policy was a comfortable fit. The institution accepted the role of remediation in providing open access and assimilation of underprepared and nontraditional students to higher education as one of its many missions. However, the complexities of that identity became evident in the dispute the policy rekindled over conceptions of remediation as a potential barrier to student entry and the access mission of the institution.
- At the University of Central Oklahoma, the implementors also read-

ily accepted the intent and meaning they inferred from the policy—that the standards of the university should be maintained and remediation should be done in some other sector of the public higher education system. Even though a portion of the institution's student body still required remediation, it became another institution's concern, and UCO staff wanted only to get the necessary administrative procedures set up with as little fuss and bother as possible. Paradoxically, this meant not adequately reconsidering some institutional practices that the policy mandated changing, thus producing more technical violations of the policy than at the other two institutions.

Clearly, effective implementation resulted from different decisions and actions by these three implementing institutions. But even more, the policy, as a symbol of goals and roles of the institutions, took on different meanings in different settings and required different types of interpretations. What appeared to be acceptable local implementation had meanings in institutions that did not necessarily match the original intent of the policy. Conversely, in circumstances in which meanings appeared to be consistent between policy makers and implementor, cultures in the institutions were so multidimensional that other interests or values impeded implementation of the policy. Of course, the view of the implementations this study portrays represents steps taken at particular points in time. At each institution, the process of applying values and identities to procedures, actions and plans is continually repeated. Thus, the implementation of a policy will change over time and the policy will continue to be one component in the constant reformation of identity and culture within the institutions.

Elmore (1980), in his classic article on policy implementation, long ago alerted us that we should use organizations' contextual nature and uniquenesses to improve policymaking.

Organizations can be remarkably effective devices for working out difficult public problems, but their use requires an understanding of the reciprocal nature of authority relations. Formal authority travels from top to bottom in organizations, but the informal authority that derives from expertise, skill, and proximity to the essential tasks that an organization performs travels in the opposite direction. (p. 606)

However, more than simple proximity and special knowledge argue for a contextual and adaptive perspective in policymaking. An interpretive perspective forces the recognition that there are multiple meanings to policy and that they cannot be determined or dictated from above.

One difference between the bottom-up approach and the interpretive approach to policy implementation is that the former sees local accom-

modation of policy as a function of policy leeway and calls on policy-makers to produce policies that promote implementor discretion. The interpretive perspective, on the other hand, suggests that local construction of the policy meaning and impact is a fundamental social process and that implementor adaptation is an unavoidable part of the policy implementation process. As Yanow (1996, p. 234) concludes, "When the validation of such qualities as identity and status are the underlying subjects of public policy debates, their implementation will likely be fraught with contested meanings and associated ambiguities." The implementation process will confront the complications of social action and the fragmentation of social construction processes, thus assuring that other meanings will be introduced into the process. This study highlights a view of institutional cultures as differentiated and subject to multiple influences, only one of which is policy pronouncements. Thus, policies and their symbolic meanings must be combined with various other influences in the culture in an interactive process that promotes adaptability of the policy meaning and legitimates the context sensitive behavior of implementors.

A contextually rich and interpretive approach to studying policy implementation gives us the perspective to fully understand the hows and whys of policy implementation. This will encourage policymakers and analysts to appreciate that the local functioning of organizational cultures does not necessarily mean corrupt implementation. In fact, as McLaughlin (1987) points out, the resulting mutual accommodation and likely incremental pace of change may not give policymakers the immediate, significant compliance they want, but it may give them what they need. The diminished disruptions may well allow broad-based policy to accommodate the problems and complications of specific application, promote more stable changes that remain part of the social construct of the policy realm into the future, and therefore continue to be an influence while facing changing circumstances at the point of service.

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Book Reviews

Overcoming Heterosexism and Homophobia: Strategies that Work, edited by James T. Sears and Walter L. Williams. New York: Columbia University Press, 1997. 456 pp. \$ 49.50 (\$18.50)

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The concepts of multiculturalism and diversity seem to be entrenched in the lexicon of higher education, yet their definitions are as varied as the institutions that advocate for their inclusion. Should sexual orientation be included in these definitions or should the terms be omitted? If they are excluded, why? Homophobia? Heterosexism? A combination of the two? Or are there additional reasons that influence their exclusion? James Sears and Walter Williams provide a collection of essays in their book, whose purpose is to move beyond analyzing homophobia and heterosexism and to provide strategies that are most effective in reducing the biases targeted toward gay males, lesbians, and bisexuals.

The edited volume is composed of five sections: (1) foundational issues, (2) working with ethnic groups and family members, (3) working with students, (4) working in professional training programs, and (5) working within institutions. Although the book is not specifically focused on the academy, researchers and practitioners will find it furnished with useful techniques on how to combat homophobia and heterosexism, especially within institutions of higher learning.

The first section provides foundational issues that lay the theoretical groundwork. James Sears provides an excellent synthesis of earlier research, which reveals how to reduce homophobic behavior and heterosexism inequality. He also addresses the current limitations of the research (e.g., lack of studies on various racial and ethnic individuals, mainly assessing undergraduate students, and lack of longitudinal research designs). Sears argues that, in order to influence change in heterosexuals' attitudes, we as researchers and practitioners, need to study and implement strategies which will affect these individuals' cognitive, affective, and behavioral components. By integrating these three dimensions, activists can then specifically tailor strategies and programs which may reduce homophobia and heterosexism among "straight" individuals who have different sociocultural backgrounds.

Gust Yep's essay posits that the way we communicate shapes and maintains heterosexism and homophobia in our society. He provides several theories on how communication may influence individual beliefs and attitudes about gay,

lesbian, bisexual, and transgendered people. Dee Bridgewater discusses how coming out to oneself and to others is important in changing not only other people's attitudes, but eventually in laying the foundation for societal change. The final chapter in the section notes how activists, educators, and researchers should examine other cultures that either do not discriminate or are inclusive of same-sex relationships. The author, Walter Williams, argues that by understanding how these societies have incorporated this level of human sexuality we can utilize their strategies in the West to help combat certain aspects of homophobia and heterosexism.

The second section discusses how to work with family members and ethnic groups to overcome homophobia and heterosexism. Authors Arguellas and Fernandez and Reyes and Yep argue that homosexuality is viewed differently in the Latino/a and Asian American communities, while Rhue and Rhue suggest how certain events, individuals, and institutions (e.g., patriarchy, the Church, Nation of Islam, scholars, and popular culture) influence heightened homophobia and heterosexism within the African American population. Blumenfeld, Durgin-Chinchard, and Vennard each discuss how various groups, organizations, and individuals can be influential in helping eradicate prejudices. The section concludes with a very unique essay explaining how the use of music influences the affective domain of individuals. Russell suggests that, although most strategies are designed to affect one's intellect, it is also important that participants' emotions are influenced in order to reduce homophobia and heterosexism.

Working with students is the focus of the third section of the book. The first three chapters pertain to college students. Brunner explains how she uses class discussion, writing, and performance to teach her students about sexual biases. Mager and Sulek suggest that different pedagogical techniques should be used with African American college students in helping them overcome their homophobia and heterosexism. The third chapter, by Myers and Kardia, provides the reader with a theoretical understanding of a certain college program and lays the foundation for their results and discussion section. The essay notes that varied strategies are needed when educating college students in a program to reduce homophobia. The next two chapters involve students in high school. While Roy provides insight on how she constructs open dialogue in the classroom, Van de Ven explains how an entire public school system attempts to reduce homophobia. The final chapter transcends both secondary and postsecondary institutions. The authors, Sattel, Keyes, and Tupper, argue that for student athletes, coaches play a pivotal role in reducing or eliminating negative attitudes toward gay, lesbian, and bisexual individuals.

Professional training programs are the focus of part four of the edited volume. Marinobele posits that strategies to reduce homophobia need to commence in elementary school. Hulsebosch and Koerner note that, not only is reducing homophobia important in the early part of a child's life, but also salient is how teachers and parents can work together to attenuate biases. The emphasis shifts from elementary students to college students in the remaining chapters. Counselors who provide advice to homosexual or bisexual students within an institution of higher education are highlighted by Emert and Milburn. The remaining essays focus on specific majors or professions: social work (Cramer), medical school (Wallick and Townsend), criminal justice (Iasenza), and law enforcement (Stewart). Stewart's article was particularly poignant in

arguing that, based on his research, individuals who provide sensitivity training need to begin with the individual's beliefs and opinions regarding homosexuality. Police officers in his study were confused when a theoretical framework (i.e., feminist theory) was used as part of the training program. Instead of helping reduce homophobia and heterosexism, the inclusion of a theoretical concept seemed to confuse the participants more than help them in understanding the significance of their biases.

A case study, written by Crew, regarding the evolution of the Episcopalian church and how it has evolved to include gay males, lesbians, and bisexuals, begins the final section of the book, *Working With Institutions*. Nugget's essay follows by postulating that attitudes toward homosexuality within the Catholic priesthood are notably divergent. Fong argues quite convincingly, in his chapter, that if heterosexism and homophobia are to be eliminated, national gay, lesbian, and bisexual organizations are going to have to build bridges to other civil rights organizations in hopes of advancing gay-friendly policies. Authors Baggett and Andre describe the importance of economics for individuals and the queer community at large. How to make alliances in the workplace is the focus of McNaught's essay on employment in the corporate world. Finally, Barret and Nardi provide insights on how to utilize and monitor the media (print and electronic) to reduce homophobia and heterosexism.

This book's greatest asset is its attempt to provide techniques that have been proven to reduce heterosexism and homophobia within certain contexts. *Beyond Tolerance: Gays, Lesbians, and Bisexuals on Campus* (1991) provides an adequate account of how to combat sexual prejudices on the college campus. However, it does not thoroughly address how to reduce homophobia and heterosexism in institutions of higher education. Sears and Williams's decision to include a multicultural perspective is especially salient, given that gay, lesbian, and bisexual people of color are rarely represented in national queer organizations. Fong's essay on establishing alliances with non-homosexual organizations is arguably one of the most telling chapters in the book. In Rhoads's (1994) *Coming Out in College: The Struggle for a Queer Identity*, students also recognized the salience of effective alliance building in their attempts to deal with heterosexism and homophobia on a college campus. The aspect of coalition building should be thoroughly explored and studied to assist activists in their work. Although the majority of the essays are important in efforts to change attitudes, I believe Fong has proficiently articulated why we must build bridges and how mainstream gay organizations need to reach out to other oppressed groups.

Generally I found the book to be quite revealing and useful in explaining how individuals utilize various techniques in overcoming or attenuating biases and stereotypes toward bisexual and homosexual individuals. A few of the essays, however, focused too much on the process and did not assess whether the strategies had any lasting effects in changing the minds of heterosexual individuals. The short-term outcomes may seem beneficial, but without any empirical longitudinal analyses, we can only speculate as to whether these individuals were forever affected. In addition, the inclusion and placement of some of the chapters left this reviewer questioning why certain essays that did not seem to address techniques on reducing homophobia or heterosexism were included in this volume. Finally, a concluding chapter by the editors would have been helpful for the reader. The final essay could have provided areas for future research

or a summation of common areas and recommendations postulated by each of the authors.

The book has provided strategies needed to begin the process of reducing prejudices and biases against gay, lesbian, and bisexual people. Those of us at our colleges and universities who understand how pernicious homophobia and heterosexism are to students, peers, and colleagues must first reflect introspectively on our own intolerances and "isms" before we begin educating others. It will be a prolonged process, but one that is overdue. Sears and Williams have provided us a guidebook on how to reduce our biases and assist in educating others; it is now up to us to follow through and take them up on their challenge.

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Academic Couples: Problems and Promises, edited by
Marianne A. Ferber and Jane Loeb. Champaign, IL: The University of
Illinois Press, 1997. 308+ pp. \$44.95. (\$19.95).

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Writing from the perspectives of economics, history, sociology, law, and administration, the editors and contributors to *Academic Couples* illuminate a subject sure to be of interest to at least one third of all faculty who are married or living with partners (the fraction whose partners also work as academics, according to Helen Astin and Jeffrey Milem). The book should interest many others for wider reasons, because the subject of academic couples would scarcely arise in the absence of three deep-seated secular trends in American society. First, ever since sociologists have discussed social mobility, they have recognized that education is rapidly becoming its most important channel. Second, over the past sixty years, there has been an increasing correlation in the education levels of spouses: couples are ever more "sorted" by education (rather than, e.g., ethnicity or parental occupation). Finally, and most familiar to all, married women have entered the labor force in growing proportions. As a net result, many more couples will have to share not just domestic chores but office space, especially when, as in academia, entry to firms is dependent on education. In other words, many of today's problems and promises of couples as an economic unit also arise for couples as members of colleges and universities. That truism, far from trivial, frames questions that, under the direction of Marianne Ferber and Jane Loeb, have broad importance for the understanding of higher education.

Feminist concerns guide many projects reported in the book. The reason for this is not obvious, because men form half of most academic couples (thus mak-

ing it all the more curious that, except for Milem, the other sixteen contributors are women). But feminist concerns are natural, and not because the domestic sphere is a woman's natural concern. From Paula Stephan and Mary Mathewes Kassis we learn that academia was an identifiably female profession during the 1920s (when a greater proportion of faculty were women than worked in the labor force generally). College teaching gradually became much less feminized than the total labor force, among other reasons because universities established or implemented state rules against nepotism, forcing the involuntary "retirement" of women married to faculty men. Women thus became less prominent in higher education until the 1980s for the same reason that academic couples became less common. Could the return of women to greater prominence be linked to the formulation by universities of more humane and far-sighted policies regarding couples? One can hope.

The editors do not merely assemble but also go some way to synthesize the research of a uniformly strong, interdisciplinary group of contributors. Karen Miller-Loessi and Deborah Henderson place the subject in the context of the recent economic and social history of women's employment. Paula Stephan and Mary Mathewes Kassis present general trends and original case studies of five institutions. Linda Perkins shows how in the Historically Black Colleges early in this century educated African-American women were considered too important to leave out of the mission of collective racial uplift. Dorothy Miller and Anita Skeen discuss the situation of unmarried couples, those who are heterosexual as well as those who are gay and lesbian. The legal issues surrounding academic couples are discussed by Elaine Shoben, who brings special attention to the case law and statutory regulation of nepotism and antinepotism.

Astin and Milem present essential descriptive information from a 1989 survey of 91,000 faculty members at 432 institutions, and they also analyze this information for possible differences in salary or scholarly publications between those respondents whose partner was an academic as compared with respondents whose partner worked outside academia or did not participate in the labor force. Marcia Bellas scrutinizes in even greater detail the publication patterns of academics in the state of Illinois. When appropriate academic disciplinary controls are entered and when sample selection bias is corrected, Bellas finds no significant effect of having an academic partner on the overall productivity of female or male faculty. Marianne Ferber and Emily Hoffman further examine the survey data discussed by Bellas in order to assess whether academic partners in Illinois are disadvantaged with respect to salary and promotions, as compared to those whose partners are not academics. Contrary to the findings presented by Astin and Milem, Ferber and Hoffman found no evidence of an impact on salary or promotions of having an academic partner among respondents from twenty-two Illinois institutions.

Phyllis Hutton Raabe puts the situation of academic couples into a valuable perspective by comparing institutional arrangements supporting couples in higher education with programs offered in large corporations or in the work force generally. Her findings do *not* reveal universities to be especially progressive in terms of, e.g., paid maternity leave or supporting child care. Lilli Hornig reviews policies that are in place nationally, discussing the pitfalls and potentials of various policies with regard to spousal hiring and tenuring. Finally, Jane Loeb shares detailed information she compiled while working within the ad-

ministration of the University of Illinois at Urbana-Champaign, concluding that most of the concerns over spousal hiring have proved unwarranted. The volume ends with a useful summary by the editors of major findings reported in each chapter.

Despite the comprehensiveness of the book, its terrain stretches out toward numerous points awaiting further exploration. For example, notwithstanding the excellent chapter by Phyllis Hutton Raabe, the book's (necessary) focus on couples in academia raises fascinating questions about the status of academic couples relative to nonacademic working couples. The contributors also leave for future investigations the role that children play in the lives of academic couples. What is the effect of academic couples on the home environment, including the number and spacing of children, and how does the presence of children interact with the employment of both parents in academia? Finally, future work must define more precisely the meaning of an "academic" partner. How many of the partners discussed in these chapters are in tenure-track positions? How many staff the burgeoning ranks of adjuncts and fixed-term employees, who rely on spouses for insurance and other benefits? The editors and contributors to this volume have gone far to stimulate investigation of these and other essential questions about the intersection of higher education with the domestic lives of its workers.

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